$35.00

STANDARD DUTY CARRIER
MEDIUM DUTY CARRIER
HEAVY DUTY CARRIER

OPERATIONS AND MAINTENANCE MANUAL

JERR-DAN

An Oshkosh Corporation Company

1080 Hykes Road
Greencastle, PA 17225
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FOREWORD

This manual serves as a guide for the owner and operator in the safe operation and optimum performance of your Jerr-Dan equipment.

For your safety, and the safety of others, you must

- know the proper use of the equipment
- use the equipment within its capability
- develope consistent habits of proper use
- use good judgement

Before attempting to operate the unit, carefully read all sections of this manual.

Keep this manual with your equipment at all times. Refer to it if in doubt of proper operation.

Information contained in this manual reflects how your Jerr-Dan equipment was built at the factory. Modifications or additions by the distributor or owner are not reflected in this manual.

This manual does not include operation and maintenance information for the commercial chassis (International, Ford, GM, etc.). That information is provided by the chassis manufacturer.

When inquiring about operation, maintenance or warranty, please have ready your equipment's Sales Order Number, Serial Number and Model Number. This information is found on the aluminum tag riveted to the front corner of the deck on the driver's side.

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Jerr-Dan Corporation strives to provide information that is accurate, complete and useful. All information contained in this manual is as accurate as known at the time of publication and is subject to change, without notice, as a result of continuous product improvements. Jerr-Dan reserves the right to amend the information in this document at any time without prior notice.

Should you find inadequacies in the text, please send your comments to the following address:

Jerr-Dan Corporation
Attn: Technical Publications
1080 Hykes Road
Greencastle, PA 17225

or by e-mail at technicalpublications@jerr-dan.com.

Always keep this manual in your vehicle so the operator can study it as needed before a recovery. Remember to replace the manual if lost.

Additional or replacement manuals or replacement safety warning labels can be ordered by calling Jerr-Dan Parts at 717-597-7111.

The material in this document is the property of Jerr-Dan Corporation. No part of this document may be photocopied, reproduced or translated to another language without the express written consent of Jerr-Dan Corporation.

Manufactured under one or more of the following patents: 5,133,633; 5,575,606; 5,697,741; 5,722,810; 5,951,235; 6,231,294 B1; 6,315,515 B1; 6,336,783 B1; 6,447,239 B2 and 7,264,305 B2 with other Patents Pending.

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JERR-DAN

An Oshkosh Corporation Company

1080 Hykes Road Greencastle, PA 17225
(717) 597-7111

LIMITED WARRANTY

Manufacturer's Warranty. Manufacturer's sole warranty shall be the following, which Distributor shall make on behalf of Manufacturer by conspicuous notice in writing accompanying each contract or memorandum of sale:

1. Warranty. Jerr-Dan Corporation, ("Manufacturer") warrants each new product made by it to be free from defects in material or workmanship for one year from the date of initial sale, lease, rental, or other disposition of such product, and agrees only to repair or replace at its own expense, f.o.b. the place or places of manufacture, at manufacturer's option, any part or parts of the product found to be defective in material or workmanship, provided Manufacturer is notified of such defect or defects within the one year warranty period and given a reasonable time to correct the defect. In no case, shall the warranty extend to defects in materials, components, or services furnished by third parties. Defects caused by chemical action, or the presence of abrasive materials and defects arising following the operation beyond rated capacity or the improper use or application of any Products shall not be considered defects within the scope of the foregoing warranty. If any repairs or alterations are made or any parts are replaced during the period covered by any warranty above mentioned by other than an authorized Manufacturer's Distributor in accordance with authorized Manufacturer's service manuals or with other than parts, accessories, or attachments authorized by Manufacturer for use in its products, customer shall pay for all such repairs or parts without recourse against Manufacturer, and Manufacturer shall be relieved of responsibility for fulfillment of this warranty with respect to parts or components of all repairs, alterations or replacements so made. No claims for labor shall be considered unless authorized by Manufacturer.

2. Disclaimer as to Consequential or Special Damages. Under no circumstances shall Manufacturer be liable for any consequential or special damage which any person, firm, corporation, or other entity may suffer or claim to suffer or incur or claim to incur as a result of any defect in the product or in any correction or alteration thereof made or furnished by Manufacturer or others. "Consequential" or "special damages" as used herein includes but is not limited to costs of transportation, lost sales, lost orders, lost profits, lost income, increased overhead, labor and material costs and cost of manufacturing variances and operational inefficiencies.

3. Maximum Liability. The maximum liability of Manufacturer under the exclusive warranty set forth herein shall be the amount paid to Manufacturer by the vendor of the component with respect to the product to which such vendor warranty applies.

4. Limitation of Liability. The limitation of liability provisions herein shall apply to any and all claims or suits brought against Manufacturer, including any claim based upon negligence, breach of contract, breach of warranty, strict liability or any other theories upon which liability may be asserted against Manufacturer.

5. Exclusive and Entire Warranty. The warranty constitutes Manufacturer's entire warranty as to the product and it is expressly agreed that the remedies of dealer and those claiming under dealer as stated in this warranty are exclusive. Manufacturer does not assume (and has not authorized any other person to assume on its behalf) any other warranty or liability in connection with any product covered by this warranty.

MANUFACTURER EXPRESSLY DISCLAIMS ANY AND ALL OTHER WARRANTIES OF ANY KIND WHATSOEVER AS TO THE PRODUCT FURNISHED HEREUNDER, INCLUDING BUT NOT LIMITED TO EXPRESS OR IMPLIED WARRANTIES AS TO MERCHANTABILITY, FITNESS FOR PARTICULAR PURPOSES SOLD, DESCRIPTION OR QUALITY OF THE PRODUCT FURNISHED HEREUNDER.

6. Notice of Occurrence. This warranty shall be void if, upon the occurrence of any incident involving any product made by Manufacturer, and resulting in any personal injury or property damage, customer shall fail to notify Manufacturer within 24 hours of such occurrence or permit Manufacturer audit representatives to have immediate access to such product and to all records of and within the control of the customer and/or distributor relating to the product and the occurrence.

7. Filing of Warranty Claim. Upon notifying the Manufacturer of a failure, the Manufacturer or its representative will verbally authorize and confirm by letter the repairs to be made. Verbal authorization will require the following information:

A) Owner's name and telephone number.

B) The dealer's name from whom it was purchased.

C) The Manufacturer's unit serial number.

D) Telephone number of the party making the repairs.

E) The part numbers needed to make repairs.

F) Owner to be informed of C.O.D. on parts, 50% to assure return of defective parts.

At this time, the Manufacturer will ship as soon as practical the parts needed to make the repair. Included with the parts will be the invoice for the parts and a Request for Warranty form, with the Warranty Return Tags.

The vehicle owner/dealer will complete the Request for Warranty form and the Warranty Return Tag marked "Return with Shipping Notice". Both documents should be attached to the shipping notice and returned to the Manufacturer by mail. The parts to be returned shall be tagged with the Warranty Return Tag (more than one part pertaining to the same warranty claim shall be identified with the same warranty claim number - see number on Warranty Return Tag). All parts under this claim shall be returned to the Manufacturer pre-paid for warranty evaluation.

Upon receiving the part or parts for warranty evaluation, the part will be inspected and tested. After being inspected and tested, the decision to honor or deny warranty claim shall be based on analysis of all available information.

When warranty is honored, the Manufacturer will reimburse the owner/dealer in the amount agreed to by both parties.

If warranty is denied, the owner and distributor will be notified in writing of the decision and a full explanation for the decision will be given.

8. Manufacturer may at any time amend the foregoing form of warranty without prior notice.

JERR-DAN

An Oshkosh Corporation Company

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LIMITED WARRANTY

Coverage and Procedures

Like our wheel lift and car carrier products, Jerr-Dan warranty programs are designed for the long haul.

Whether you own a wheel lift or car carrier, you are assured that your equipment is of the highest quality, and is covered under this limited warranty.*

Our one-year unlimited mileage plan is offered for wheel lifts and car carriers. This warranty is designed for the most comprehensive protection of your specific equipment.

WHEEL LIFT:

The Jerr-Dan one-year warranty covers material and workmanship including the following:

I. Body
II. Substructure
III. Wheel lift assembly
IV. Wrecker boom assembly
V. Winch and winch components (excluding cable)
VI. Hydraulics
VII. Electrical wiring assembly

CAR CARRIERS:

The Jerr-Dan one-year warranty covers material and workmanship including the following:

I. Deck
II. Winch and winch components (excluding cable)
III. Substructure
IV. Hydraulics
V. Electrical wiring assembly

Procedures for warranty coverage:

1. Contact your selling distributor.
2. If necessary, contact Jerr-Dan for the distributor nearest you - Call 1-800-926-9666.
3. If necessary, Jerr-Dan may authorize repair by a qualified equipment service center. Under these arrangements, it will be necessary to obtain an estimate of repairs before any work is performed. Send estimate of repair cost to:

   Jerr-Dan Corporation
   Warranty Department
   1080 Hykes Road
   Greencastle, PA 17225

   Be sure to include your daytime phone number.
4. Authorization for repairs under this limited warranty will be provided by telephone within 24 hours of receipt of valid warranty claims and confirmed by letter or fax.

*5. This outlines the Jerr-Dan One-Year Warranty Plan. Coverage does not include damages caused by excessive abuse or consequential damages resulting from the lack of proper service, maintenance or need for repairs. All plans begin at original retail purchase date.

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SAFETY

The safe operation of your Jerr-Dan Carrier is your responsibility. Read this manual and the truck manufacturer's manual and thoroughly understand them. You can be held legally responsible for injuries or damage resulting from careless or unsafe operating practices.

Our recommendations for operating your equipment can help you avoid unsafe practices and their bad consequences. These recommendations are contained in this manual.

Jerr-Dan Corporation is not responsible for the results of any unsafe practice of tow operators or for the failure of your equipment or its accessories resulting from improper use or lack of maintenance.

The danger from a vehicle continues after it is disabled or wrecked. Recovering or towing vehicles can be dangerous too! The danger threatens tow operators and everyone else close by. As a tow operator you must develop an awareness of the hazards involved. You must use every safeguard to prevent injuries.

Careful consideration of the immediate surrounding conditions such as the weather, terrain, type or condition of the vehicle to be recovered and the condition and experience of the operator is foremost to the safety and success of the operation.

Tie-down straps are provided for use with your new Jerr-Dan Recovery Vehicle. Each week inspect all straps for any signs of rips, tears, cuts, fatigue or other damage. Check the hooks to. Make sure they have not been bent or deformed. If strap or hook damage is noted, they must be replaced before being used.

Wire rope cables wear out or can become damaged. Periodically inspect the wire rope cable for any signs of fatigue or damage. Check the hooks to be sure they have not been bent or deformed. Replace immediately when damaged. **Refer to the Wire Rope Handling and Inspection Section.**

For each step in operating your equipment develop the habit of asking yourself "is it safe to proceed?" Carefully check your set up before starting a lift or tow.

Because recoveries can be so different, we cannot warn you of all the possible hazards you will encounter, but we will tell you of the most common hazards

that we know about. We also strongly recommend that you receive specialized and advanced training from a professional Towing and Recovery instructor before operating any recovery equipment.

To alert personnel to hazardous operating practices, safety messages are used throughout the manual. Each safety message contains a safety alert symbol and a signal word to identify the hazard's degree of seriousness.

CAUTION:

Identifies when a potentially hazardous situation exists and may result in a minor or moderate injury or property damage.

WARNING:

Identifies when a potentially hazardous situation exists and could result in death or serious injury.

DANGER:

Identifies when an imminently hazardous situation exists and can result in death or serious injury.

STANDARD DUTY CARRIER

Includes the following Models:
_ _NGAF - 5 Ton Pioneer Fixed Rail
_ _NGADF - 5 Ton Pioneer Aluminum Dual Angle Fixed Rail
_ _NGAR - 5 Ton Pioneer Aluminum Removable Rail
_ _NGAT - 5 Ton Pioneer Aluminum Transporter
_ _WSRB - 5 Ton Steel Rustler
_ _RRSB - 5 Ton Steel B.I.C.
_ _SLPB - 5 Ton Steel Shark
_ _STRB - 5 Ton Steel B.I.C. Transporter
_ _SRR6T-W - 6 Ton Steel Removable Rail
_ _SRRD6T-W - 6 Ton Steel Dual Angle Removable Rail

DO NOT EXCEED THE FOLLOWING RATINGS:

DECK RATING:
- 5 Ton ..... 10,000 lbs
- 6 Ton ..... 12,000 lbs

WINCH RATING: (Standard Ramsey Worm Gear) [1]
- Each Drum (Single Speed, Variable Control) ..... 8,000 lbs

WINCH RATING: (Optional Ramsey Planetary Gear) [1]
- Each Drum (Single Speed, Variable Control) ..... 8,000 lbs

WINCH RATING: (Optional Ramsey Gear) [1]
- Each Drum (Single Speed, Variable Control) ..... 10,000 lbs

WIRE ROPE: (8,000 lb Winch)
- Working Limit Each Line ..... 4,314 lbs
- Nominal Breaking Strength ..... 15,100 lbs
- Construction ..... 6 x 25 EIPS RRL IWRC
- Diameter ..... 3/8 inch
- Standard Length ..... 56 Feet

WIRE ROPE: (10,000 lb Winch)

Working Limit Each Line	5,828 lbs
Nominal Breaking Strength	20,400 lbs
Construction	6 x 25 EIPS RRL IWRC
Diameter	7/16 inch
Standard Length	56 Feet

TOW OPTION RATINGS:	Lift	Tow
IRL Wheel Lift	3,000 lbs	7,500 lbs[2]
ZOD Wheel Lift	3,000 lbs	7,500 lbs[2]
Towbar	3,500 lbs	7,500 lbs
Tow Hitch	3,500 lbs	7,500 lbs
2" Reese Hitch Receiver	500 lbs	5,000 lbs
2 1/2" Reese Hitch Receiver	1,200 lbs	12,000 lbs
Stationary Pintle Hitch	4,000 lbs	15,000 lbs

[1] SAE J706: Surface Vehicle Recommended Practices - Rating of Winches

[2] SAE J2512: Surface Vehicle Recommended Practices - Towing Equipment Ratings and Practices

MAXIMUM LIFTING CAPACITY - THE MAXIMUM LOAD THAT CAN BE LIFTED.

GROSS COMBINED WEIGHT RATING (GCWR) - THE VALUE SPECIFIED BY THE VEHICLE MANUFACTURER AS GCW.

GROSS COMBINED WEIGHT (GCW) - ACTUAL WEIGHT OF THE ENTIRE VEHICLE AT THE GROUND WITH TRAILER OR TRAILERS, INCLUDING VEHICLE EQUIPMENT, DRIVER, PASSENGER, FUEL AND PAYLOAD (EVERYTHING THAT MOVES WITH THE VEHICLE).

NOTE

These ratings apply to the structural design of the Standard Duty Carrier only . They might be limited by the axle rating and gross vehicle weight rating of the truck chassis.

The payload and towing capacity of any towing vehicle must meet the following:

- The actual payload on the towing vehicle must not exceed the posted rating and the towed vehicle load must not exceed the posted lift / towing ratings.
- The total weight of the towing vehicle (cab chassis, body, payload, driver, passenger(s), tools, fuel, etc.) and the towed vehicle load must not exceed the GVWR (Gross Vehicle Weight Rating) of the towing vehicle.
- The total weight of the towing vehicle and a towed vehicle load must be distributed so that each axle's GAWR (Gross Axle Weight Rating) is not exceeded.
- The total weight of the towing vehicle and towed vehicle (everything that moves with the towing vehicle) must not exceed the GCWR (Gross Combination Weight Rating) of the towing vehicle.

Staying within these ratings is necessary to maintain the safety and performance of the towing vehicle.

CHECK TRUCK MANUAL FOR SPECIFIC GVW & AXLE RATINGS. ALSO LOOK AT THE CERTIFICATION DECAL AFFIXED TO DRIVER'S SIDE DOOR JAMB, HINGE PILLAR OR LATCH POST AND THE S.T.A.R. PLACARD ON THE DRIVER'S SIDE OF THE HEADBOARD.

MEDIUM DUTY CARRIER

Includes the following Models:
_75T2B - 7.5 Ton Steel B.I.C.
_75TRB - 7.5 Ton Steel B.I.C. Transporter

DO NOT EXCEED THE FOLLOWING RATINGS:

DECK RATING: ..... 15,000 lbs

WINCH RATING: (Standard Ramsey Worm Gear) [1]
Each Drum (Single Speed, Variable Control) ..... 10,000 lbs

WINCH RATING: (Optional Ramsey Worm Gear) [1]
Each Drum (Single Speed, Variable Control) ..... 12,000 lbs

WIRE ROPE:
Working Limit Each Line ..... 5,828 lbs
Nominal Breaking Strength ..... 20,400 lbs
Construction ..... 6 x 25 EIPS RRL IWRC
Diameter ..... 7/16 inch
Standard Length ..... 56 Feet

TOW OPTION RATINGS:	Lift	Tow
IRL Wheel Lift (Standard)	3,000 lbs	7,500 lbs[2]
IRL Wheel Lift (Optional)	4,000 lbs	12,000 lbs[2]
IRL Wheel Lift (Optional) with T-37 Grids	4,000 lbs	8,000 lbs[2]
ZOD Wheel Lift	3,000 lbs	7,500 lbs[2]
Towbar (Standard)	3,500 lbs	7,500 lbs
Towbar (Optional)	5,000 lbs	12,000 lbs
Tow Hitch	3,500 lbs	7,500 lbs
2" Reese Hitch Receiver	500 lbs	5,000 lbs
2 1/2" Reese Hitch Receiver	1,200 lbs	12,000 lbs
Stationary Pintle Hitch	4,000 lbs	15,000 lbs

[1] SAE J706: Surface Vehicle Recommended Practices - Rating of Winches

[2] SAE J2512: Surface Vehicle Recommended Practices - Towing Equipment Ratings and Practices

MAXIMUM LIFTING CAPACITY - THE MAXIMUM LOAD THAT CAN BE LIFTED.

GROSS COMBINED WEIGHT RATING (GCWR) - THE VALUE SPECIFIED BY THE VEHICLE MANUFACTURER AS GCW.

GROSS COMBINED WEIGHT (GCW) - ACTUAL WEIGHT OF THE ENTIRE VEHICLE AT THE GROUND WITH TRAILER OR TRAILERS, INCLUDING VEHICLE EQUIPMENT, DRIVER, PASSENGER, FUEL AND PAYLOAD (EVERYTHING THAT MOVES WITH THE VEHICLE).

NOTE

These ratings apply to the structural design of the Medium Duty Carrier only . They might be limited by the axle rating and gross vehicle weight rating of the truck chassis.

The payload and towing capacity of any towing vehicle must meet the following:

- The actual payload on the towing vehicle must not exceed the posted rating and the towed vehicle load must not exceed the posted lift / towing ratings.
- The total weight of the towing vehicle (cab chassis, body, payload, driver, passenger(s), tools, fuel, etc.) and the towed vehicle load must not exceed the GVWR (Gross Vehicle Weight Rating) of the towing vehicle.
- The total weight of the towing vehicle and a towed vehicle load must be distributed so that each axle's GAWR (Gross Axle Weight Rating) is not exceeded.
- The total weight of the towing vehicle and towed vehicle (everything that moves with the towing vehicle) must not exceed the GCWR (Gross Combination Weight Rating) of the towing vehicle.

Staying within these ratings is necessary to maintain the safety and performance of the towing vehicle.

CHECK TRUCK MANUAL FOR SPECIFIC GVW & AXLE RATINGS. ALSO LOOK AT THE CERTIFICATION DECAL AFFIXED TO DRIVER'S SIDE DOOR JAMB, HINGE PILLAR OR LATCH POST AND THE STRUCTURAL CAPACITIES PLACARD ON THE DRIVER'S SIDE OF THE HEADBOARD.

HEAVY DUTY CARRIER
10 TON

Includes the following Models:
_10T2B - 10 Ton Steel Wrangler
_10TRB - 10 Ton Steel Transporter

DO NOT EXCEED THE FOLLOWING RATINGS:

DECK RATING: ..... 20,000 lbs

WINCH RATING: (Standard Ramsey Worm Gear) [1]
Each Drum (Single Speed, Variable Control) ..... 12,000 lbs

WINCH RATING: (Optional Ramsey Worm Gear) [1]
Each Drum (Single Speed, Variable Control) ..... 20,000 lbs

WIRE ROPE: (12,000 lb Winch)
Working Limit Each Line ..... 5,828 lbs
Nominal Breaking Strength ..... 20,400 lbs
Construction ..... 6 x 25 EIPS RRL IWRC
Diameter ..... 7/16 inch
Standard Length ..... 56 Feet

WIRE ROPE: (20,000 lb Winch)
Working Limit Each Line ..... 11,770 lbs
Nominal Breaking Strength ..... 41,200 lbs
Construction ..... 6 x 36 EIPS RRL IWRC
Diameter ..... 5/8 inch
Standard Length ..... 75 Feet

TOW OPTION RATINGS:	Lift	Tow
IRL Wheel Lift (Standard)	3,000 lbs	7,500 lbs[2]
IRL Wheel Lift (Optional)	4,000 lbs	12,000 lbs[2]
IRL Wheel Lift (Optional) with T-37 Grids	4,000 lbs	8,000 lbs[2]
Towbar (Standard)	3,500 lbs	7,500 lbs
Towbar (Optional)	5,000 lbs	12,500 lbs
Tow Hitch	3,500 lbs	7,500 lbs
2" Reese Hitch Receiver	500 lbs	5,000 lbs
2 1/2" Reese Hitch Receiver	1,200 lbs	12,000 lbs
Stationary Pintle Hitch	5,000 lbs	20,000 lbs

[1] SAE J706: Surface Vehicle Recommended Practices - Rating of Winches

[2] SAE J2512: Surface Vehicle Recommended Practices - Towing Equipment Ratings and Practices

MAXIMUM LIFTING CAPACITY - THE MAXIMUM LOAD THAT CAN BE LIFTED.

GROSS COMBINED WEIGHT RATING (GCWR) - THE VALUE SPECIFIED BY THE VEHICLE MANUFACTURER AS GCW.

GROSS COMBINED WEIGHT (GCW) - ACTUAL WEIGHT OF THE ENTIRE VEHICLE AT THE GROUND WITH TRAILER OR TRAILERS, INCLUDING VEHICLE EQUIPMENT, DRIVER, PASSENGER, FUEL AND PAYLOAD (EVERYTHING THAT MOVES WITH THE VEHICLE).

NOTE

These ratings apply to the structural design of the Heavy Duty Carrier only . They might be limited by the axle rating and gross vehicle weight rating of the truck chassis.

The payload and towing capacity of any towing vehicle must meet the following:

- The actual payload on the towing vehicle must not exceed the posted rating and the towed vehicle load must not exceed the posted lift / towing ratings.
- The total weight of the towing vehicle (cab chassis, body, payload, driver, passenger(s), tools, fuel, etc.) and the towed vehicle load must not exceed the GVWR (Gross Vehicle Weight Rating) of the towing vehicle.
- The total weight of the towing vehicle and a towed vehicle load must be distributed so that each axle's GAWR (Gross Axle Weight Rating) is not exceeded.
- The total weight of the towing vehicle and towed vehicle (everything that moves with the towing vehicle) must not exceed the GCWR (Gross Combination Weight Rating) of the towing vehicle.

Staying within these ratings is necessary to maintain the safety and performance of the towing vehicle.

CHECK TRUCK MANUAL FOR SPECIFIC GVW & AXLE RATINGS. ALSO LOOK AT THE CERTIFICATION DECAL AFFIXED TO DRIVER'S SIDE DOOR JAMB, HINGE PILLAR OR LATCH POST AND THE STRUCTURAL CAPACITIES PLACARD ON THE DRIVER'S SIDE OF THE HEADBOARD.

HEAVY DUTY CARRIER
15 TON

Includes the following Models:
_15T2B - 15 Ton Steel Wrangler
_15TRB - 15 Ton Steel Transporter

DO NOT EXCEED THE FOLLOWING RATINGS:

DECK RATING: ..... 30,000 lbs.

WINCH RATING: (Standard Ramsey Worm Gear) [1]
Each Drum (Single Speed, Variable Control) ..... 20,000 lbs.

WIRE ROPE:
Working Limit Each Line ..... 11,770 lbs.
Nominal Breaking Strength ..... 41,200 lbs.
Construction ..... 6 x 36 EIPS RRL IWRC
Diameter ..... 5/8 inch
Standard Length ..... 75 Feet

TOW OPTION RATINGS:	Lift	Tow
IRL Wheel Lift (Standard)	3,000 lbs	7,500 lbs [2]
IRL Wheel Lift (Optional)	4,000 lbs	12,000 lbs [2]
IRL Wheel Lift (Optional) with T-37 Grids	4,000 lbs	8,000 lbs [2]
Towbar (Standard)	3,500 lbs	7,500 lbs
Towbar (Optional)	5,000 lbs	12,500 lbs
Tow Hitch	3,500 lbs	7,500 lbs
2" Reese Hitch Receiver	500 lbs	5,000 lbs
2 1/2" Reese Hitch Receiver	1,200 lbs	12,000 lbs
Stationary Pintle Hitch	5,000 lbs	20,000 lbs

[1] SAE J706: Surface Vehicle Recommended Practices - Rating of Winches

[2] SAE J2512: Surface Vehicle Recommended Practices - Towing Equipment Ratings and Practices

MAXIMUM LIFTING CAPACITY - THE MAXIMUM LOAD THAT CAN BE LIFTED.

GROSS COMBINED WEIGHT RATING (GCWR) - THE VALUE SPECIFIED BY THE VEHICLE MANUFACTURER AS GCW.

GROSS COMBINED WEIGHT (GCW) - ACTUAL WEIGHT OF THE ENTIRE VEHICLE AT THE GROUND WITH TRAILER OR TRAILERS, INCLUDING VEHICLE EQUIPMENT, DRIVER, PASSENGER, FUEL AND PAYLOAD (EVERYTHING THAT MOVES WITH THE VEHICLE).

NOTE

These ratings apply to the structural design of the Heavy Duty Carrier only . They might be limited by the axle rating and gross vehicle weight rating of the truck chassis.

The payload and towing capacity of any towing vehicle must meet the following:

- The actual payload on the towing vehicle must not exceed the posted rating and the towed vehicle load must not exceed the posted lift / towing ratings.
- The total weight of the towing vehicle (cab chassis, body, payload, driver, passenger(s), tools, fuel, etc.) and the towed vehicle load must not exceed the GVWR (Gross Vehicle Weight Rating) of the towing vehicle.
- The total weight of the towing vehicle and a towed vehicle load must be distributed so that each axle's GAWR (Gross Axle Weight Rating) is not exceeded.
- The total weight of the towing vehicle and towed vehicle (everything that moves with the towing vehicle) must not exceed the GCWR (Gross Combination Weight Rating) of the towing vehicle.

Staying within these ratings is necessary to maintain the safety and performance of the towing vehicle.

CHECK TRUCK MANUAL FOR SPECIFIC GVW & AXLE RATINGS. ALSO LOOK AT THE CERTIFICATION DECAL AFFIXED TO DRIVER'S SIDE DOOR JAMB, HINGE PILLAR OR LATCH POST AND THE STRUCTURAL CAPACITIES PLACARD ON THE DRIVER'S SIDE OF THE HEADBOARD.

MFG BY:_____

_____

DATE OF MFR:MO_____YR._____

GVWR:_____KG (_____LB)

GAWR-FRONT:

_____KG (_____LB)

WITH_____TIRES,

_____RIMS,@_____KPA

(_____PSI) COLD_____

GAWR-INTERMEDIATE(1):

_____KG (_____LB)

WITH_____TIRES,

_____RIMS,@_____KPA

(_____PSI) COLD_____

GAWR-INTERMEDIATE(2):

_____KG (_____LB)

WITH_____TIRES,

_____RIMS,@_____KPA

(_____PSI) COLD_____

GAWR-REAR:

_____KG (_____LB)

WITH_____TIRES,

_____RIMS,@_____KPA

(_____PSI) COLD_____

THIS VEHICLE HAS BEEN COMPLETED IN ACCORDANCE WITH THE PRIOR MANUFACTURERS' IVD, WHERE APPLICABLE. THIS VEHICLE CONFORMS TO ALL APPLICABLE FEDERAL MOTOR VEHICLE SAFETY STANDARDS, [AND BUMPER AND THEFT PREVENTION STANDARDS, IF APPLICABLE] IN EFFECT IN:

MO._____YR._____

VEHICLE IDENTIFICATION NUMBER:

_____

VEHICLE TYPE:

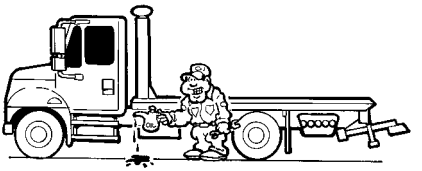
_____

Certification Decal

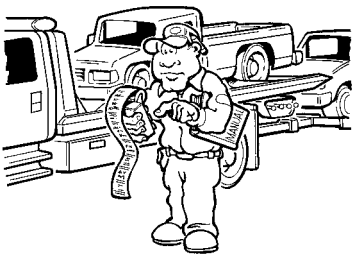
Affixed to the Driver's Side Door Jam, Hinge Pillar or Latch Post

Provided by the Final Stage Vehicle Manufacturer according to Title 49 Part 567 of the Code of Federal Regulations (CFR)

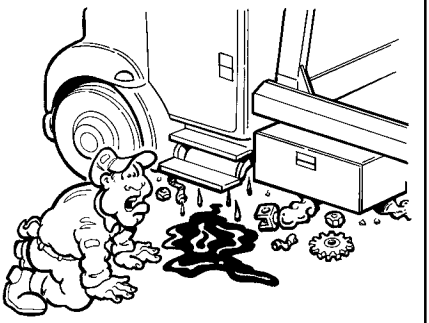
- Read operating and loading instructions thoroughly.



- Don't use a recovery vehicle that has not been properly maintained. Make sure mounting bolts are tight and moving parts are lubricated.

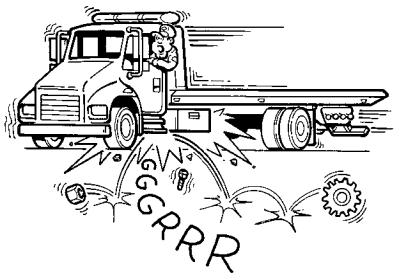


- Become familiar with the loads that your unit can safely transport without exceeding the structural rating of the Jerr-Dan equipment or the gross axle weight ratings, gross vehicle weight rating, and the gross combined vehicle weight rating of your chassis.

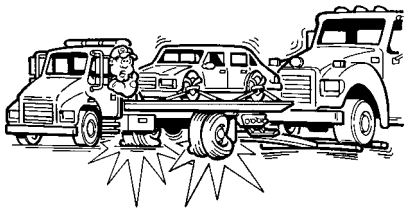


- Don't operate the engine faster than recommended. Excessive speeds can damage PTO, hydraulic pumps, and winches.

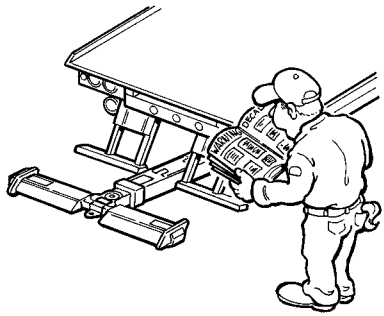
- After you have placed a vehicle on the carrier for towing, don't start the tow until you have installed tie-down straps and chains.



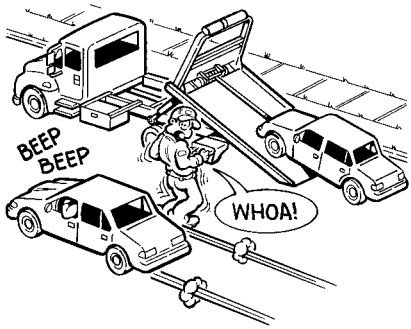
- NEVER travel with the PTO engaged. Damage to the recovery vehicle's transmission and hydraulic components will occur. Engage the PTO only when operating the controls.



- NEVER exceed the front and/or rear axle ratings of your towing equipment.

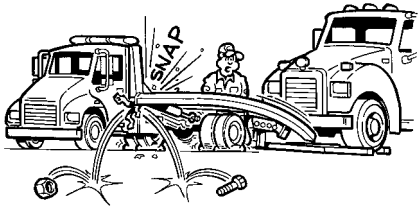


- Observe all CAUTION, WARNING, and DANGER decals.

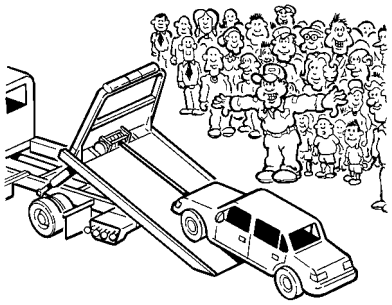


- Make sure you are clear of oncoming traffic. Driver side and passenger side controls are standard on your Jerr-Dan carrier.

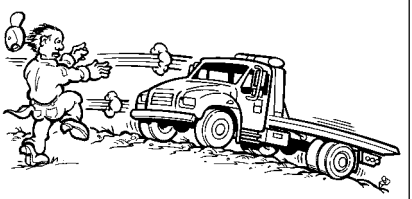
- Stay clear of equipment to avoid pinching injury.



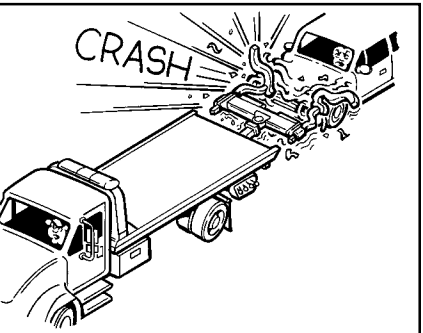
- NEVER exceed the rated capacity of the body or truck chassis and its components or use towbar/wheel lift without a vehicle on the deck.



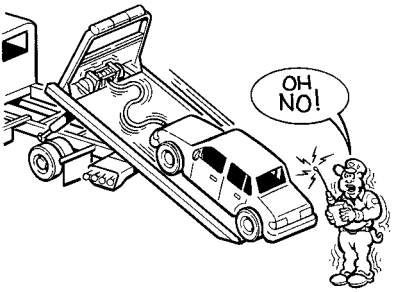
- NEVER permit bystanders in the area while performing a lift. Keep them clear of the danger zone.



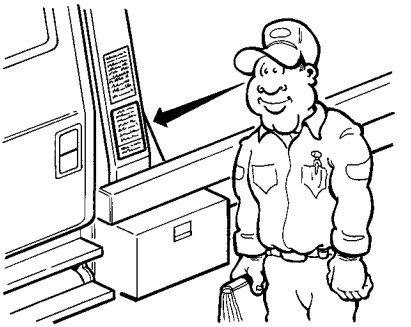
- Make sure all brakes and locks are properly set on the recovery vehicle.



- Store L-Arms when not in use. NEVER DRIVE with L-Arms in the wheel grids.

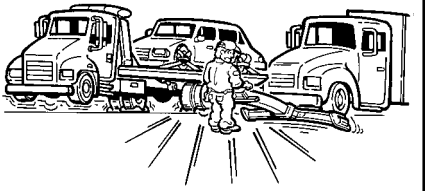


- Stay to the side of the deck when winching.

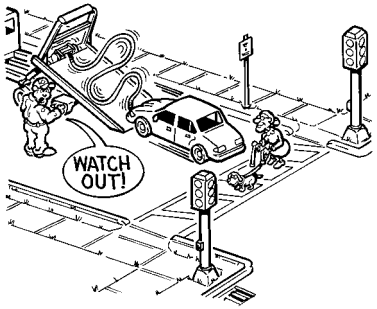


- Don't exceed the ratings. Stay within nameplate ratings.

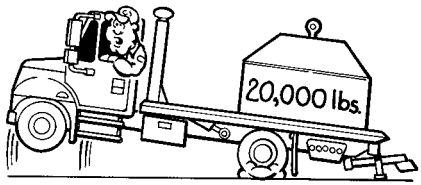
- Maintain winch cable/wire rope in good condition. Replace when worn, kinked or frayed. Do not use cable clamps.



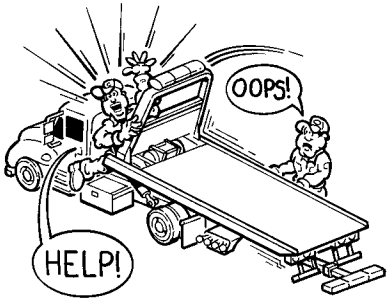
- Know the loads being moved. **NEVER OVERLOAD!**



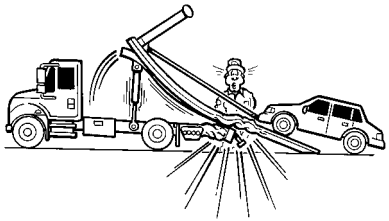
- When loading or unloading the deck and operating the winch, make sure the area behind the load is clear of personnel and obstacles.



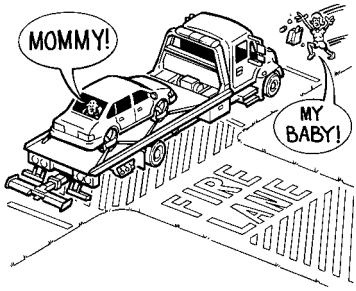
- Place the load evenly on the deck. Do not concentrate the load on one section of the deck, to the rear of the truck axles, or use towbar/wheel lift without a load on the deck.



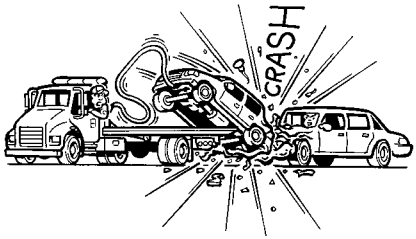
- Stay clear of equipment to avoid crushing injury.



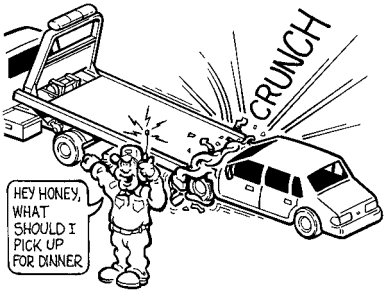
- Always put bumper on the ground to support the body and truck frame.



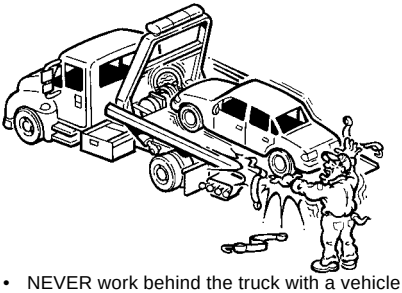
- NEVER allow riders in the towed vehicle during lifting or transport.



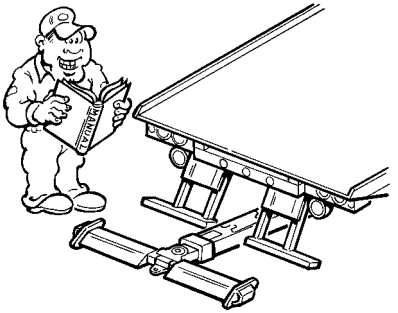
- Secure cargo to the deck at both the front and rear before the truck is driven. NEVER rely on the winch as the only means of holding the load.



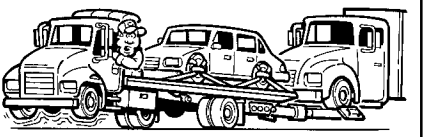
- KEEP ALERT! Do not be distracted during any operating sequences.



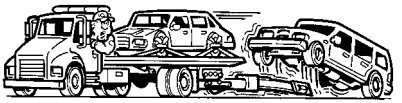
- NEVER work behind the truck with a vehicle on the deck unless the vehicle is secured at the front of the deck. (Do not rely on the winch to hold the load).



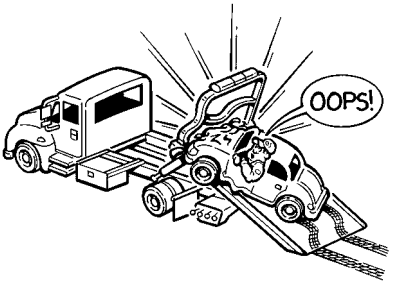
- Read and follow towbar/ wheel lift instructions for proper towing.



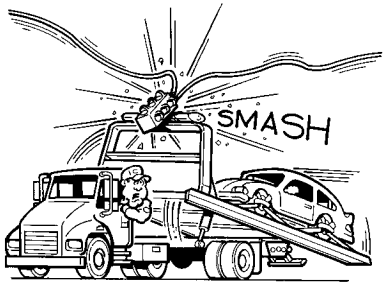
- NEVER exceed towbar/wheel lift ratings. Overloading can cause unsafe steering and braking conditions.



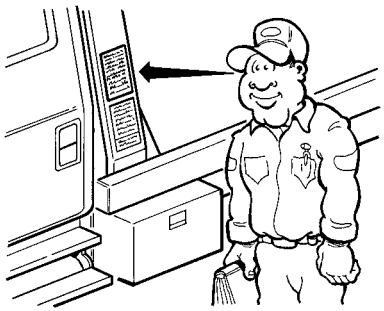
- Always use both wheel straps on wheel lift towbar.



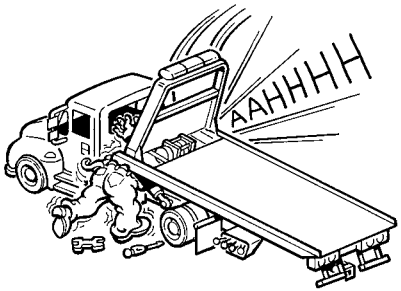
- NEVER drive a vehicle onto the deck. Always use the winch to pull the vehicle onto the deck.



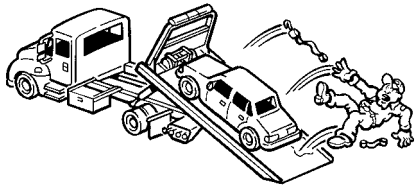
- Make sure deck is in the locked position before traveling.



- Review the Operator's Pre-transport Checklist located on the headboard of the deck or in this manual each time before you move a vehicle.

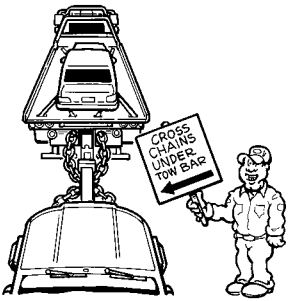


- Block up the deck before performing any service or maintenance work under the deck.



- NEVER walk or climb on the deck surface.

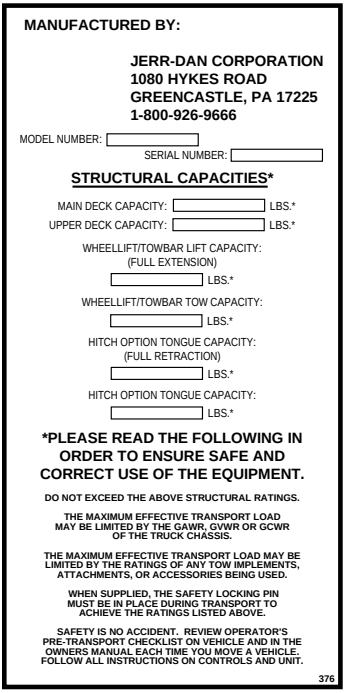
- NEVER winch from the side of the bed. Winch only from the rear with load centered and in line with the winch. Failure to do so can result in winch or wire rope damage and/or bodily injury. NEVER USE OF THE DECK WINCH FOR SIDE PULLING.



- Use separate safety chains from the towed vehicle to the subframe for standard towbar and wheel lift towbar. Always attach safety chains to the opposite side of the attaching point, crossing the chains under the towbar. Allow enough slack in the chains to maneuver around corners without binding.

CAPACITY/RATING INFORMATION PLACARDS

These placards provide information about carrier and vehicle ratings, capacities and load limits. You must stay within these ratings/capacities when using the Jerr-Dan carrier. These placards must not be obliterated, removed or painted over. They are there to remind and protect the operator. (Not all placards are used on all units) If a placard becomes lost or unreadable, it should be replaced. Replacements are available through the Service Parts Department.


MANUFACTURED BY:
JERR-DAN CORPORATION
1080 HYKES ROAD
GREENCASTLE, PA 17225
1-800-926-9666
MODEL NUMBER:
SERIAL NUMBER:
STRUCTURAL CAPACITIES*
MAIN DECK CAPACITY: LBS.*
UPPER DECK CAPACITY: LBS.*
WHEELLIFT/TOWBAR LIFT CAPACITY:
(FULL EXTENSION)
LBS.*
WHEELLIFT/TOWBAR TOW CAPACITY:
LBS.*
HITCH OPTION TONGUE CAPACITY:
(FULL RETRACTION)
LBS.*
HITCH OPTION TONGUE CAPACITY:
LBS.*
*PLEASE READ THE FOLLOWING IN ORDER TO ENSURE SAFE AND CORRECT USE OF THE EQUIPMENT.
DO NOT EXCEED THE ABOVE STRUCTURAL RATINGS.
THE MAXIMUM EFFECTIVE TRANSPORT LOAD MAY BE LIMITED BY THE GAWR, GVWR OR GCWR OF THE TRUCK CHASSIS.
THE MAXIMUM EFFECTIVE TRANSPORT LOAD MAY BE LIMITED BY THE RATINGS OF ANY TOW IMPLEMENTS, ATTACHMENTS, OR ACCESSORIES BEING USED.
WHEN SUPPLIED, THE SAFETY LOCKING PIN MUST BE IN PLACE DURING TRANSPORT TO ACHIEVE THE RATINGS LISTED ABOVE.
SAFETY IS NO ACCIDENT. REVIEW OPERATOR'S PRE-TRANSPORT CHECKLIST ON VEHICLE AND IN THE OWNERS MANUAL EACH TIME YOU MOVE A VEHICLE. FOLLOW ALL INSTRUCTIONS ON CONTROLS AND UNIT.
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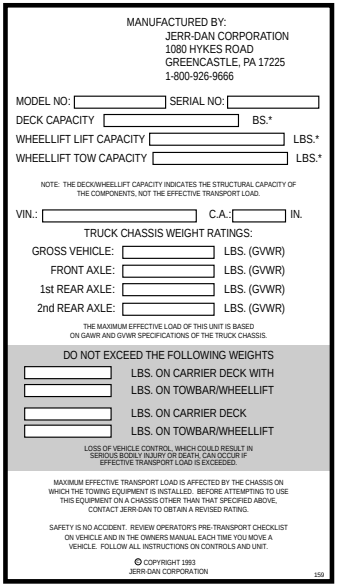
MANUFACTURED BY:
JERR-DAN CORPORATION
1080 HYKES ROAD
GREENCASTLE, PA 17225
1-800-926-9666
MODEL NO: SERIAL NO:
DECK CAPACITY BS.*
WHEELLIFT LIFT CAPACITY LBS.*
WHEELLIFT TOW CAPACITY LBS.*
NOTE: THE DECK/WHEELLIFT CAPACITY INDICATES THE STRUCTURAL CAPACITY OF THE COMPONENTS, NOT THE EFFECTIVE TRANSPORT LOAD.
VIN.: C.A.: IN.
TRUCK CHASSIS WEIGHT RATINGS:
GROSS VEHICLE: LBS. (GVWR)
FRONT AXLE: LBS. (GVWR)
1st REAR AXLE: LBS. (GVWR)
2nd REAR AXLE: LBS. (GVWR)
THE MAXIMUM EFFECTIVE LOAD OF THIS UNIT IS BASED ON GAWR AND GVWR SPECIFICATIONS OF THE TRUCK CHASSIS.
DO NOT EXCEED THE FOLLOWING WEIGHTS
LBS. ON CARRIER DECK WITH
LBS. ON TOWBAR/WHEELLIFT
LBS. ON CARRIER DECK
LBS. ON TOWBAR/WHEELLIFT
LOSS OF VEHICLE CONTROL, WHICH COULD RESULT IN SERIOUS BODILY INJURY OR DEATH, CAN OCCUR IF EFFECTIVE TRANSPORT LOAD IS EXCEEDED.
MAXIMUM EFFECTIVE TRANSPORT LOAD IS AFFECTED BY THE CHASSIS ON WHICH THE TOWING EQUIPMENT IS INSTALLED. BEFORE ATTEMPTING TO USE THIS EQUIPMENT ON A CHASSIS OTHER THAN THAT SPECIFIED ABOVE, CONTACT JERR-DAN TO OBTAIN A REVISED RATING.
SAFETY IS NO ACCIDENT. REVIEW OPERATOR'S PRE-TRANSPORT CHECKLIST ON VEHICLE AND IN THE OWNERS MANUAL EACH TIME YOU MOVE A VEHICLE. FOLLOW ALL INSTRUCTIONS ON CONTROLS AND UNIT.
© COPYRIGHT 1993
JERR-DAN CORPORATION
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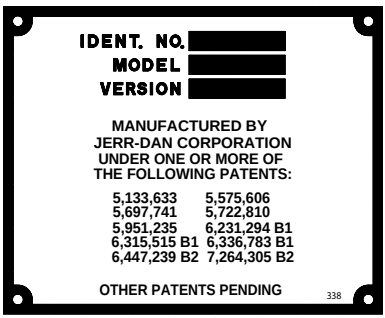
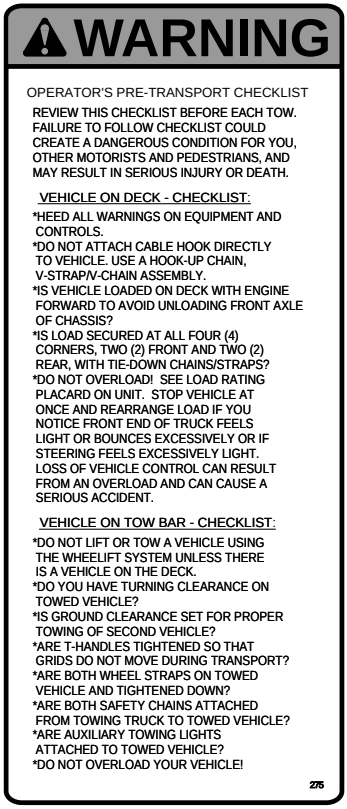


SAFETY WARNING LABELS

These safety warning labels describe hazards and what happens if you encounter them. Read each safety warning lable and figure out how to avoid the hazard. These lables must not be obliterated, removed or painted over. They are there to remind and protect the operator. (Not all decals are used on all units) If a decal becomes lost or unreadable, it should be replaced. Replacements are available through the Service Parts Department.


WARNING
OPERATOR'S PRE-TRANSPORT CHECKLIST
REVIEW THIS CHECKLIST BEFORE EACH TOW. FAILURE TO FOLLOW CHECKLIST COULD CREATE A DANGEROUS CONDITION FOR YOU, OTHER MOTORISTS AND PEDESTRIANS, AND MAY RESULT IN SERIOUS INJURY OR DEATH.
VEHICLE ON DECK - CHECKLIST:
*HEED ALL WARNINGS ON EQUIPMENT AND CONTROLS.
*DO NOT ATTACH CABLE HOOK DIRECTLY TO VEHICLE. USE A HOOK-UP CHAIN, V-STRAP/V-CHAIN ASSEMBLY.
*IS VEHICLE LOADED ON DECK WITH ENGINE FORWARD TO AVOID UNLOADING FRONT AXLE OF CHASSIS?
*IS LOAD SECURED AT ALL FOUR (4) CORNERS, TWO (2) FRONT AND TWO (2) REAR, WITH TIE-DOWN CHAINS/STRAPS?
*DO NOT OVERLOAD! SEE LOAD RATING PLACARD ON UNIT. STOP VEHICLE AT ONCE AND REARRANGE LOAD IF YOU NOTICE FRONT END OF TRUCK FEELS LIGHT OR BOUNCES EXCESSIVELY OR IF STEERING FEELS EXCESSIVELY LIGHT. LOSS OF VEHICLE CONTROL CAN RESULT FROM AN OVERLOAD AND CAN CAUSE A SERIOUS ACCIDENT.
VEHICLE ON TOW BAR - CHECKLIST:
*DO NOT LIFT OR TOW A VEHICLE USING THE WHEELIFT SYSTEM UNLESS THERE IS A VEHICLE ON THE DECK.
*DO YOU HAVE TURNING CLEARANCE ON TOWED VEHICLE?
*IS GROUND CLEARANCE SET FOR PROPER TOWING OF SECOND VEHICLE?
*ARE T-HANDLES TIGHTENED SO THAT GRIDS DO NOT MOVE DURING TRANSPORT?
*ARE BOTH WHEEL STRAPS ON TOWED VEHICLE AND TIGHTENED DOWN?
*ARE BOTH SAFETY CHAINS ATTACHED FROM TOWING TRUCK TO TOWED VEHICLE?
*ARE AUXILIARY TOWING LIGHTS ATTACHED TO TOWED VEHICLE?
*DO NOT OVERLOAD YOUR VEHICLE!
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CAUTION
FULLY RETRACT WHEEL LIFT BOOM AGAINST STOP FOR TOWING WITH BALL HITCH OR REESE. EXTEND BOOM 4 INCHES MINIMUM FOR TOWING W/ WHEEL GRID.
060

CAUTION
MAINTAIN OIL LEVEL WITHIN 1/2" OF TOP OF SIGHT GAUGE WITH ALL CYLINDERS FULLY RETRACTED. TORQUE SIGHT GAUGE BOLTS: 8 FT-LBS MAX.
272-02

⚠ CAUTION

AIR SUSPENSION MUST BE FULLY DEFLATED BEFORE TILTING DECK TO LOAD OR UNLOAD

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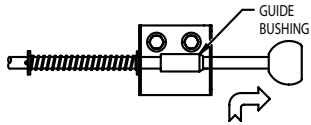
⚠ WARNING

DO NOT EXCEED TOW OPTION CAPACITIES. OVERLOADING MAY RESULT IN UNSAFE STEERING AND/OR BRAKING CONDITIONS.

274

⚠ WARNING



*TO ENGAGE WINCH: LIFT UP KNOB THEN RELEASE. OPERATE WINCH TO ENGAGE CLUTCH.

*TO FREE SPOOL WINCH: RUN WINCH IN REVERSE (REEL OUT) UNTIL THE LOAD IS OFF THE CABLE. LIFT UP KNOB AND PULL OUT. LOCK IN PLACE. DO NOT FREE SPOOL UNDER LOAD.

*BEFORE OPERATION: WINCH CLUTCH MUST BE COMPLETELY ENGAGED WITH GUIDE BUSHING POSITIONED AS SHOWN.

242

⚠ WARNING

HAVE YOU REVIEWED THE OPERATOR'S PRE-TRANSPORT CHECK LIST ON THE UNIT?

139

⚠ CAUTION

DO NOT INSTALL OR REMOVE DECK FROM SUBFRAME WITH ORBIT MOTOR FITTINGS INSTALLED.

WINCH ORBIT MOTOR FITTINGS WILL INTERFERE WITH NYLON CABLE TRACK.

330

⚠ WARNING

WINCH CABLE FAILURE MAY CAUSE INJURY OR DEATH. STAY CLEAR OF CABLE AND LOAD WHEN OPERATING.

BOTH FRONT AND REAR TIE DOWNS MUST BE USED TO SECURE VEHICLE / LOAD TO DECK. DO NOT RELY ON THE WINCH AS THE ONLY MEANS OF HOLDING THE LOAD.

CLUTCH MUST BE TOTALLY ENGAGED BEFORE STARTING THE WINCHING OPERATION.

DO NOT DISENGAGE CLUTCH UNDER LOAD.

DO NOT USE WINCH TO LIFT, SUPPORT OR OTHERWISE TRANSPORT PEOPLE.

A MINIMUM OF 5 WRAPS OF CABLE AROUND THE WINCH DRUM IS NECESSARY TO HOLD THE LOAD. CABLE SETSCREW IS NOT DESIGNED TO HOLD LOAD.

DO NOT EXCEED MAXIMUM LINE PULL RATINGS PUBLISHED IN EQUIPMENT OPERATOR'S MANUAL AND / OR WINCH OPERATING MANUAL.

012

⚠ WARNING

DO NOT EXCEED TOW OPTION CAPACITIES. OVERLOADING MAY RESULT IN UNSAFE STEERING AND/OR BRAKING CONDITIONS.

PINCH HAZARDS
AND MOVING PARTS
KEEP CLEAR OF THIS AREA

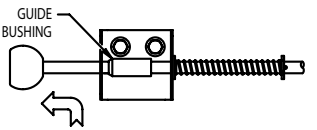
TOWED VEHICLE MUST BE CONNECTED TO BODY SUBFRAME WITH SAFETY CHAINS

⚠ CAUTION

FULLY RETRACT TOW OPTION BOOM TO AVOID DAMAGE DURING OPERATION OF OTHER CARRIER FUNCTIONS

684

⚠ WARNING



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495

⚠ WARNING

SAFETY PIN MUST BE INSTALLED WHILE TOWING. FULLY RETRACT BOOM FOR RATED CAPACITY.

391

NOTICE

ENGINE IDLE MUST BE MANUALLY INCREASED TO AT LEAST 1400 RPM AFTER PTO ENGAGEMENT TO AVOID CHASSIS ELECTRONICS FROM DISENGAGING PTO.

596

NOTICE

"MAINTENANCE FREE DESIGN"

SLIDE PAD SYSTEM REQUIRES NO LUBRICATION AFTER AN INITIAL COAT OF MOTOR OR HYDRAULIC OIL ON BEAMS OR SLIDE PADS. KEEP DECK BEAM SURFACES CLEAN.

THE SUBFRAME AND WHEEL-LIFT SYSTEM IS EQUIPPED WITH GREASELESS PIVOT JOINTS. NO LUBRICATION IS REQUIRED.

502

⚠ CAUTION

FULLY RETRACT TOW OPTION BOOM TO AVOID DAMAGE DURING OPERATION OF OTHER CARRIER FUNCTIONS.

165

⚠ WARNING

PINCH HAZARDS
AND MOVING PARTS

KEEP CLEAR OF THIS AREA

599

⚠ WARNING

VEHICLE MUST BE SECURED TO WHEEL GRID USING BOTH TIE DOWN STRAPS PRIOR TO LEAVING LOADING SITE

036

⚠ CAUTION

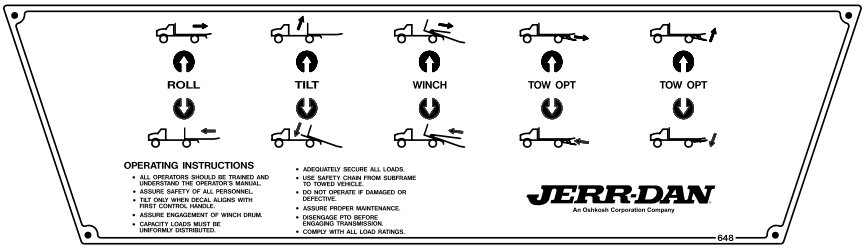
SECURE L-ARM IN STORAGE BRACKET WHEN NOT IN USE

⚠ WARNING

VEHICLE MUST BE SECURED TO WHEEL GRID USING BOTH TIE DOWN STRAPS PRIOR TO LEAVING LOADING SITE

683

OPERATION PLACARDS AND LABELS


ROLL
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TOW OPT
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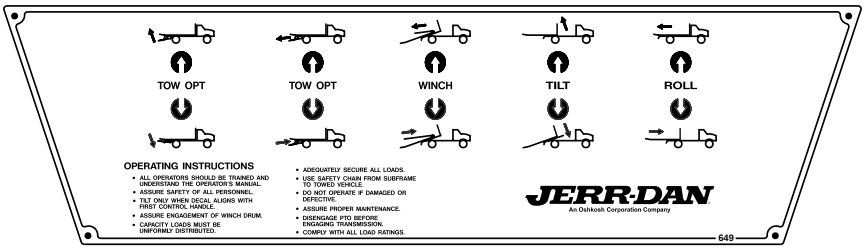
• ASSURE SAFETY OF ALL PERSONNEL.
• TILT ONLY WHEN DECAL ALIGNS WITH FIRST CONTROL HANDLE.
• ASSURE ENGAGEMENT OF WINCH DRUM.
• CAPACITY LOADS MUST BE UNIFORMLY DISTRIBUTED.
• ADEQUATELY SECURE ALL LOADS.
• USE SAFETY CHAIN FROM SUBFRAME TO TOWED VEHICLE.
• DO NOT OPERATE IF DAMAGED OR DEFECTIVE.
• ASSURE PROPER MAINTENANCE.
• DISENGAGE PTO BEFORE ENGAGING TRANSMISSION.
• COMPLY WITH ALL LOAD RATINGS.
JERR-DAN
An Oshkosh Corporation Company
648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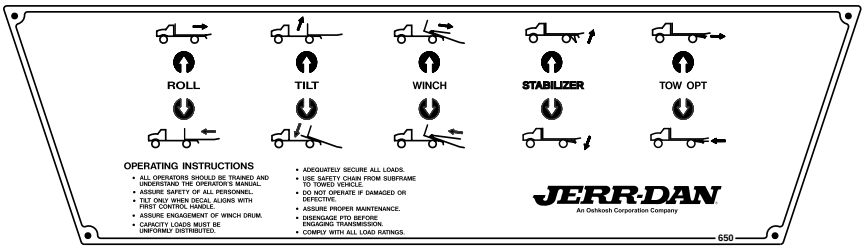
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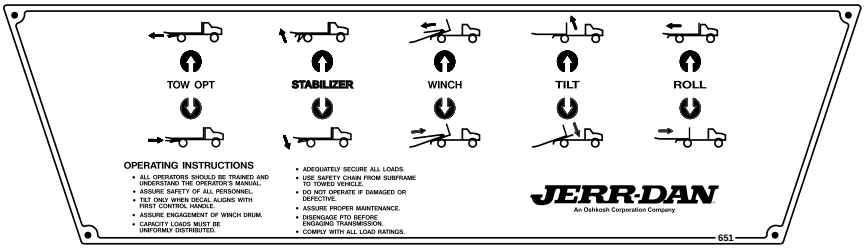
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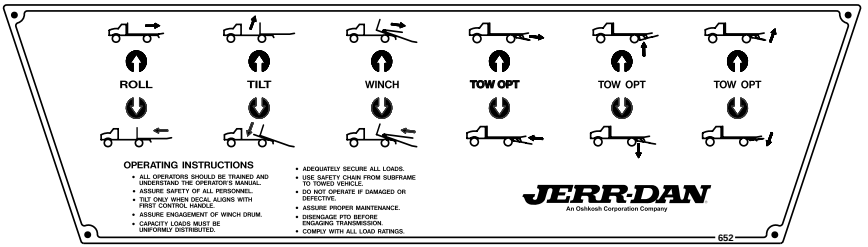
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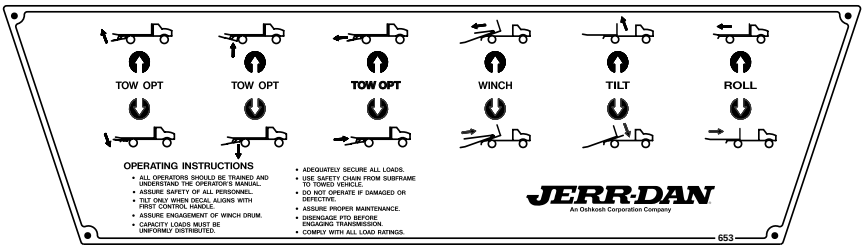
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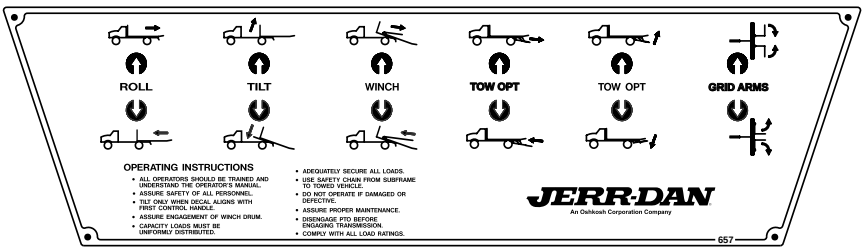
ROLL
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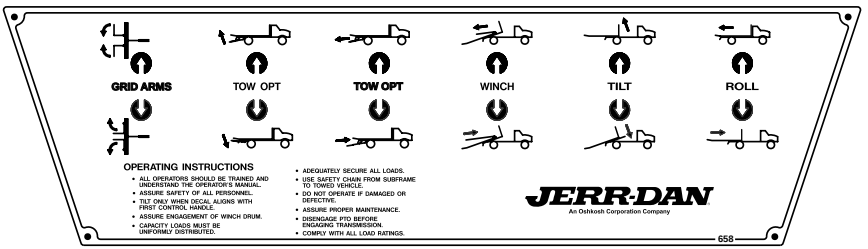
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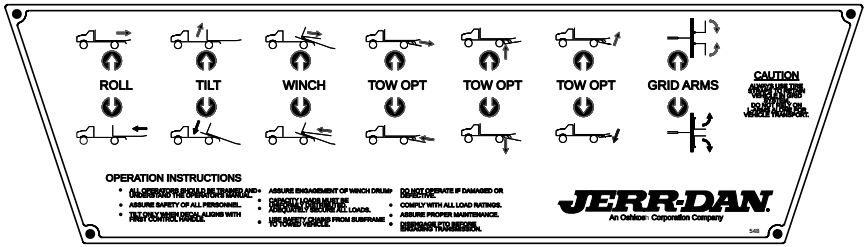
ROLL
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GRID ARMS
CAUTION
OPERATION INSTRUCTIONS
JERR-DAN
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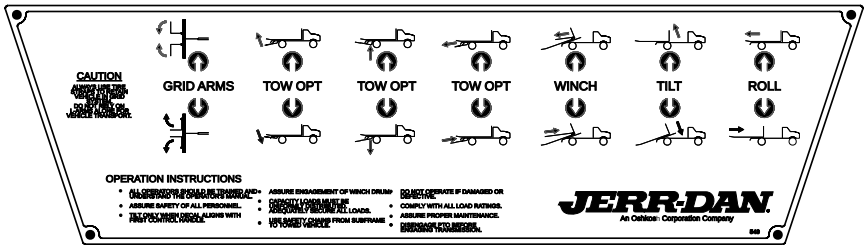
548


CAUTION
GRID ARMS
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ROLL
OPERATION INSTRUCTIONS
JERR-DAN
An Oshkosh Corporation Company
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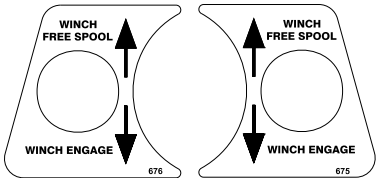
SLIDE DECK UNTIL
ARROW ALIGNS WITH
FIRST LEVER
BEFORE TILITING

UP
WHEEL LIFT
POSITION
UP
STABILIZER
POSITION


WINCH
FREE SPOOL
WINCH ENGAGE
676
WINCH
FREE SPOOL
WINCH ENGAGE
675

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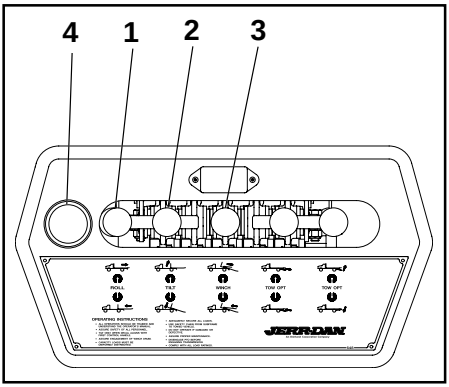
OPERATION

The safe operation of your Jerr-Dan carrier is your responsibility. You can be held legally responsible for any injuries or damage caused by the unsafe operation of your equipment. If you follow our tested and proven procedure you will operate the equipment properly. Remember you alone are always responsible for your actions.

Always know the weight distribution of your load and ensure you are within your truck's Gross Axle Weight Rating (GAWR), Gross Vehicle Weight Rating (GVWR) and Gross Combination Weight Rating (GCWR) as well as any federal or state roading regulation. In addition, be aware of your truck's overall loaded height to be sure that you are under the federal bridge law height of 13 feet 6 inches.

The operating controls for your carrier are conveniently located on both the driver and passenger sides of the deck to keep you safe and out of harms way. **Always operate the controls from the side away from traffic.**



Driver Side Control Station

The following controls are provided:

1. Rollback Control - First Handle
2. Tilt Control - Second Handle
3. Winch Control - Third Handle
4. System Pressure Gauge

   System Main Relief Pressure

   2,400 - 2,600 psi

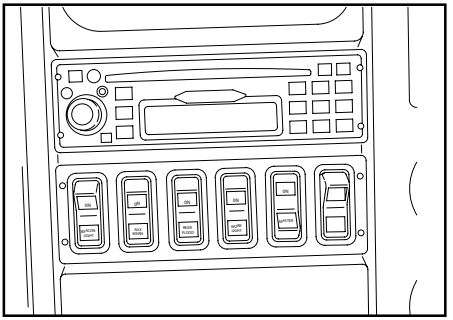
   Tilt Cylinder Port Relief Pressure*

   1,400 - 1,600 psi

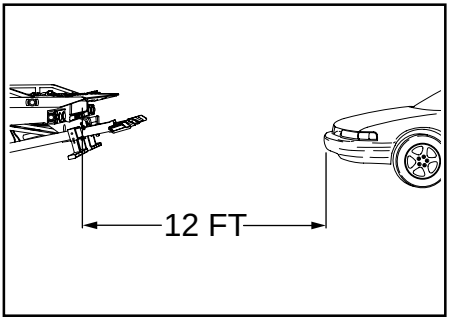
   *Medium/Heavy Duty Models and Special Equipped Standard Duty Models

TILTING THE DECK/LOADING

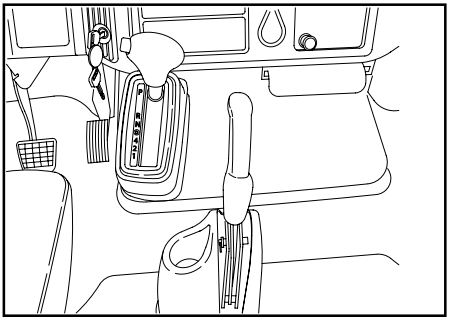
Follow these simple steps:



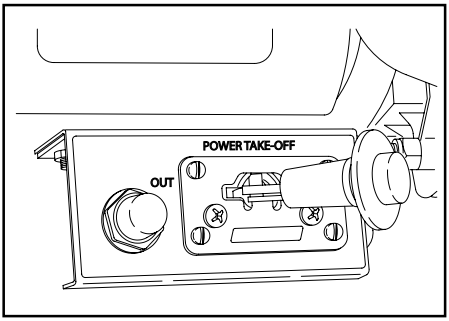
1. Turn on the safety and work lights. (Switches are located on the switch panel in the dash.)



2. Position the rear of the carrier about 12 feet from the vehicle you intend to load. Make sure the carrier is in line with the vehicle.



3. Place the carrier's transmission gear selector into Neutral or Park and set the parking brakes.

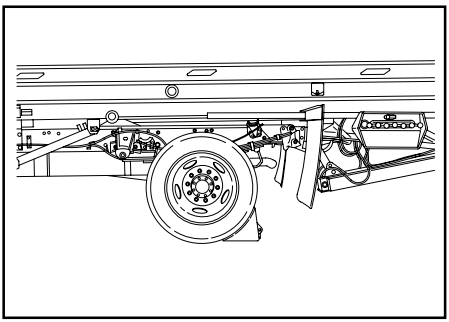


4. Engage the power take-off (PTO). Refer to PTO operator's manual. **NEVER TRAVEL WITH THE POWER TAKE-OFF CONTROL ENGAGED.** This could result in damage to the PTO unit and the recovery vehicle's transmission.

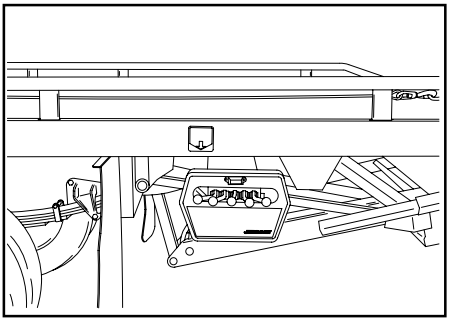
5. Adjust the electronic or manual throttle control to set the engine speed to approximately 1000-1200 R.P.M. Refer to chassis operator's manual for proper operation of the auxiliary throttle. If your chassis is equipped with the remote throttle up option from the chassis manufacturer there is no need to set the throttle up control in the cab because the throttle will automatically increase when any of the carrier hydraulic functions are operated.

CAUTION:

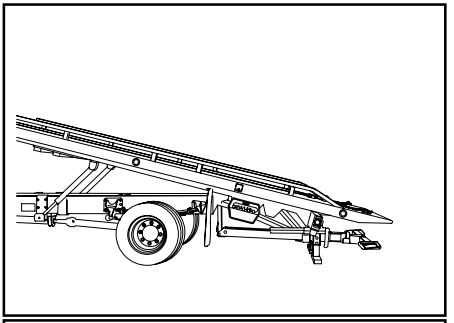
NEVER exceed 1400 R.P.M. When your hook up is complete, reset engine idle to normal.



6. Block the carrier's rear tires with wheel chocks to prevent accidental carrier movement. Check the area around the carrier and the vehicle to be loaded for obstructions or hazards.

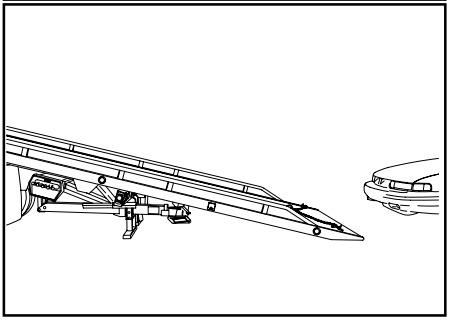


7. Raise the Rollback Control handle to slide the deck back. Align the arrow decal pointer on the side of the deck with the first control handle. **Tilting the deck too soon may cause damage to the mechanical hold down.**

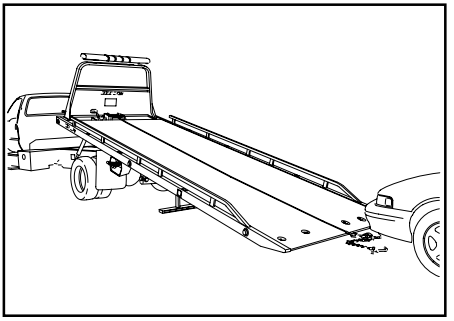


8. Raise the Tilt Control handle to raise the front of the deck until the rear bumper rests firmly on the ground.

9. Raise the Rollback Control handle again to slide the deck back. Continue sliding the deck back until the approach plate makes firm contact with the ground. Make sure that the rear bumper and the approach plate are both in firm contact with the ground before loading so there is equal weight distribution between the rear bumper and the end of the deck.

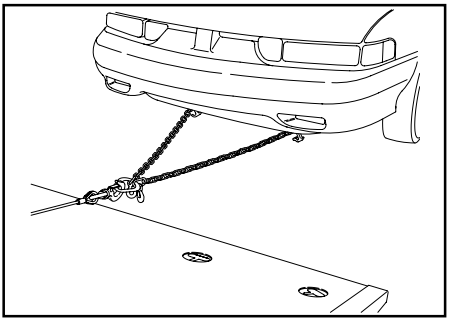


10. Next, unreel enough of the wire rope/cable from the winch to make your hookup. If you are a two man operation, raise the winch control handle and unreel the wire rope/cable from the winch while the second man keeps the wire rope/cable taut. If you are a one man operation, you can use the remote winch free spool device. **(See winch operation)**



WARNING:

Maintain a minimum of five (5) wraps of wire rope/cable on the winch drum at all times. Also maintain a uniform wrap of wire rope/cable on the drum to avoid crushing of the wire rope/cable.



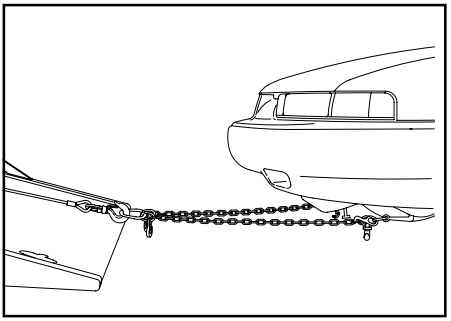
11. Attach the wire rope/cable to the vehicle to be loaded. Always use V-straps or hook-up chains to attach the wire rope/cable to the vehicle. **Refer to the AAA or vehicle manufacturer's towing manual for correct attachment points.** For the best weight distribution of your load, make sure the vehicle is loaded onto the deck with the engine forward.

CAUTION:

Always use V-straps or hook-up chains. Never connect the wire rope/cable hook directly to vehicle. Never hook the wire rope/cable back onto itself because damage to the wire rope/cable will occur.

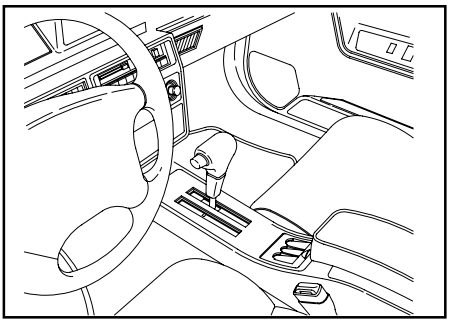
CAUTION:

Always attach the wire rope/cable with the hook pointing up.



12. Re-engage the winch clutch. **(See winch operation)**

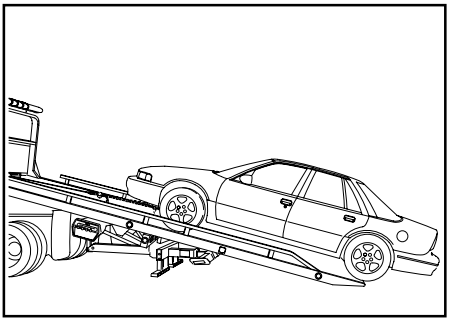
13. Slowly lower the Winch Control handle to remove any slack in the wire rope/cable.



14. Make sure the vehicle's parking brake is released and the transmission is in Neutral.

NOTE:

If the vehicle is parked on an incline, leave the parking brake partially engaged to prevent it from rolling forward on its own.



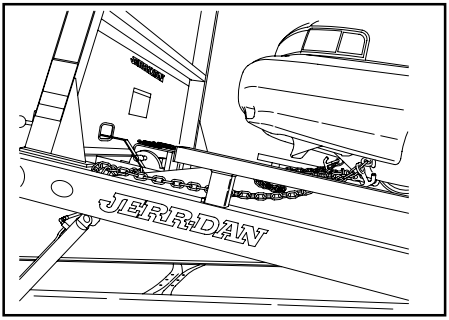
15. Slowly lower the Winch Control handle and begin winching the vehicle onto the deck and into the transport position. **Make sure that the vehicle is centered side to side.**

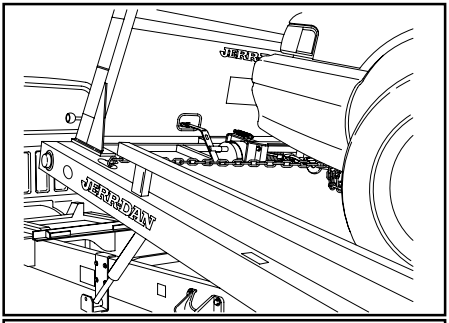
CAUTION:

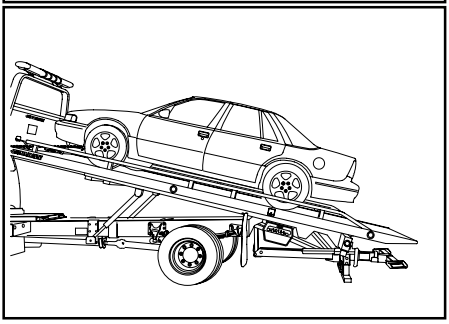
Always winch the vehicle onto the deck. Never drive a vehicle onto the deck.

CAUTION:

Remain clear of the load while winching. Never walk between the winch and its load when the winch and wire rope/cable is under tension.







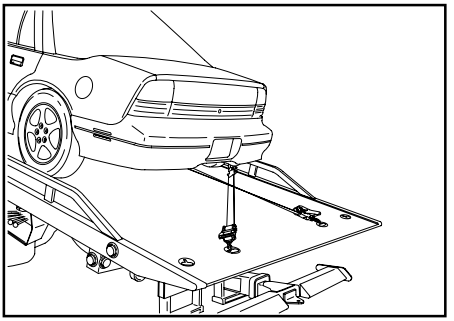
16. Secure the front of the vehicle. NEVER rely on the winch to hold the load. **(See Securing Vehicle instructions)**

CAUTION:

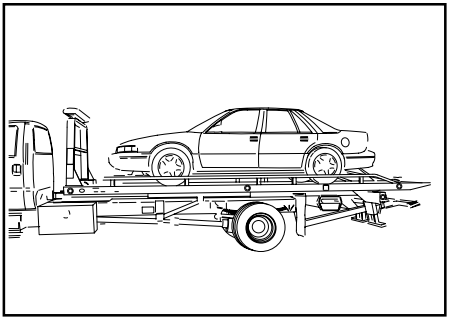
There is no need to access the vehicle once it is loaded on the deck. NEVER walk or climb on the deck surface.

17. Slowly raise the Winch Control handle to spool out some wire rope/cable to pre-load the tie-downs.

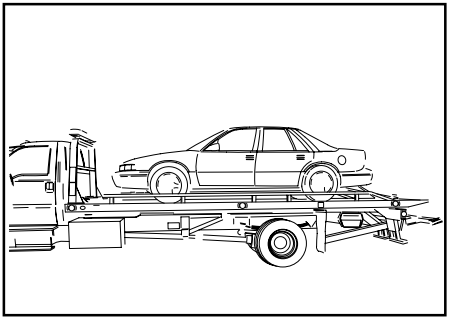
18. Lower the Rollback Control handle to move the deck forward. Align the arrow decal pointer on the side of the deck with the first control handle. **Lowering the deck too late may cause damage to the mechanical hold down.**



19. Secure the rear of the vehicle. **(See Securing Vehicle instructions)**



20. Once the vehicle is secured from movement in all directions, lower the Tilt Control handle and lower the front of the deck to the subframe.



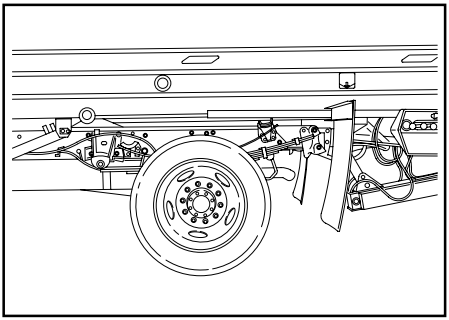
21. Lower the Rollback Control handle and move the deck completely forward until it engages the hold downs and into the transport position.

WARNING:

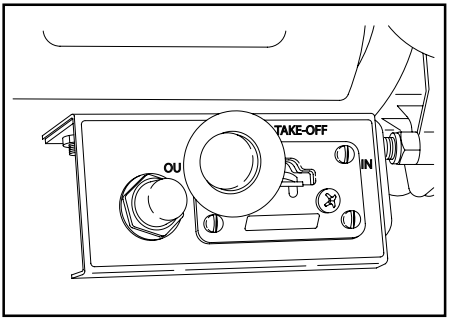
Always use tie downs at all four corners of the load. Although the winch wire rope/cable should remain attached to the vehicle and taut during transport, never rely on the winch and wire rope/cable to secure the vehicle to the carrier deck.

WARNING:

Always refer to the Operator's Pre-Transport Checklist located on the headboard of the deck before transporting. Make sure you have followed all of the items on the list.



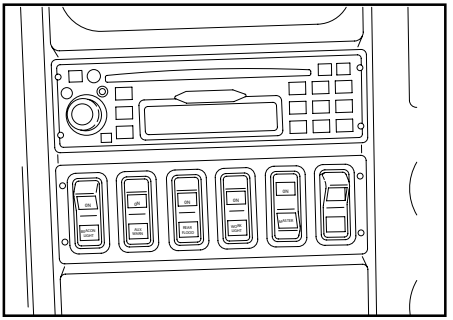
22. Remove the wheel chocks from the carrier's rear tires.



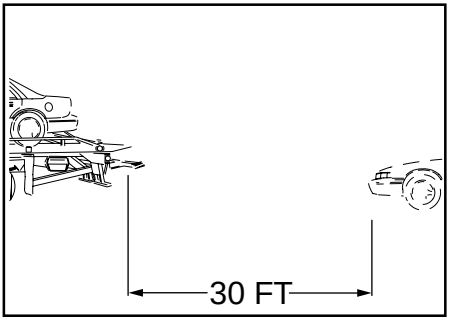
23. Disconnect the power take-off (PTO). Refer to PTO operator's manual. **NEVER TRAVEL WITH THE POWER TAKE-OFF CONTROL ENGAGED.** This could result in damage to the PTO unit and the recovery vehicle's transmission.

TILTING THE DECK/UNLOADING

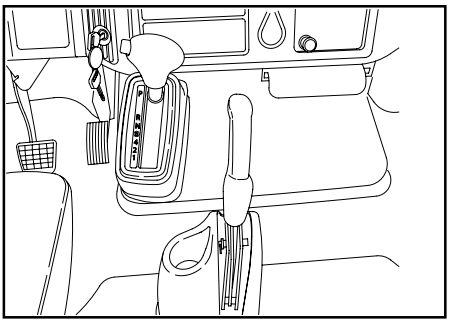
Follow these simple steps:



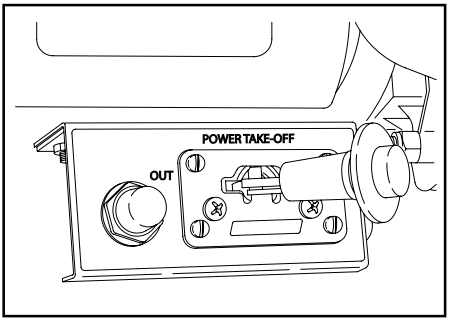
1. Turn on the safety and work lights. (Switches are located on the switch panel in the dash.)



2. Position the rear of the carrier about 30 feet from the area where you intend to unload the vehicle.



3. Place the carrier's transmission gear selector into Neutral or Park and set the parking brakes.

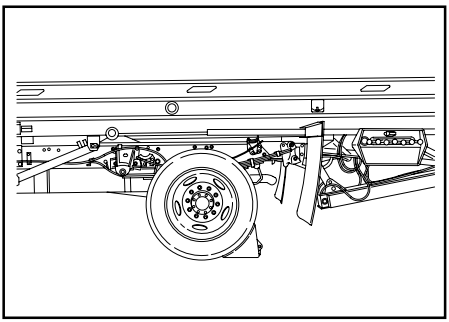


4. Engage the power take-off (PTO). Refer to PTO operator's manual. **NEVER TRAVEL WITH THE POWER TAKE-OFF CONTROL ENGAGED.** This could result in damage to the PTO unit and the recovery vehicle's transmission.

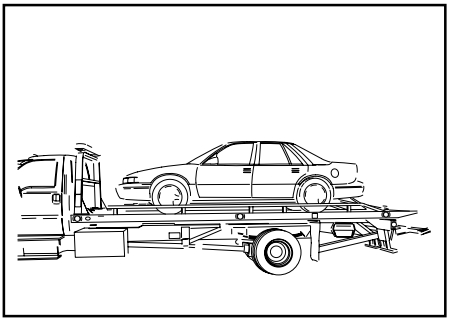
5. Adjust the electronic or manual throttle control to set the engine speed to approximately 1000-1200 R.P.M. Refer to chassis operator's manual for proper operation of the auxiliary throttle. If your chassis is equipped with the remote throttle up option from the chassis manufacturer there is no need to set the throttle up control in the cab because the throttle will automatically increase when any of the carrier hydraulic functions are operated.

CAUTION:

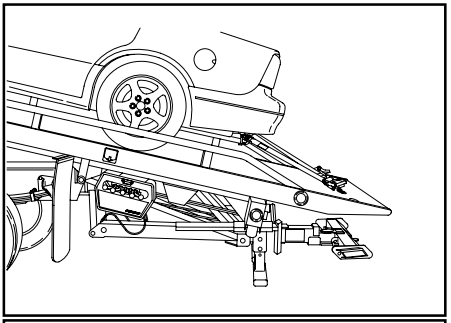
NEVER exceed 1400 R.P.M. When your hook up is complete, reset engine idle to normal.



6. Block the carrier's rear tires with wheel chocks to prevent accidental carrier movement. Check the area around the carrier and the vehicle to be loaded for obstructions or hazards.

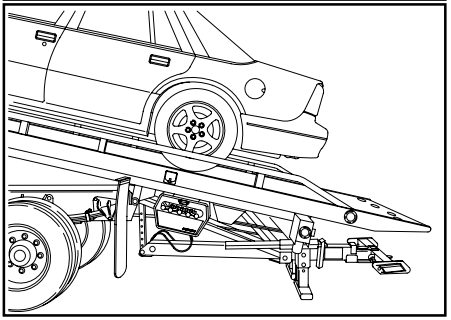


7. Raise the Rollback Control handle to slide the deck back. Align the arrow decal pointer on the side of the deck with the first control handle. **Tilting the deck too soon may cause damage to the mechanical hold down.**



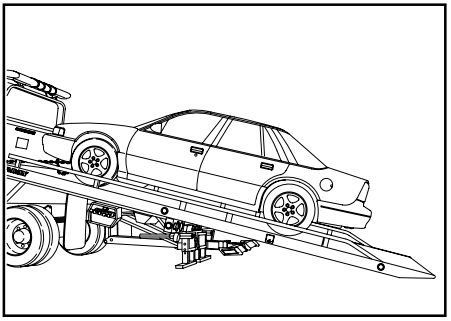
8. Raise the Tilt Control handle to raise the front of the deck until the rear bumper rests firmly on the ground.

9. Remove the tie-downs from the rear of the vehicle.

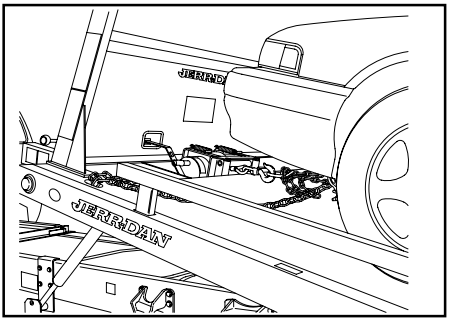


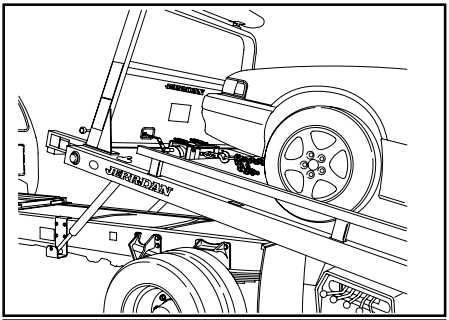
CAUTION:

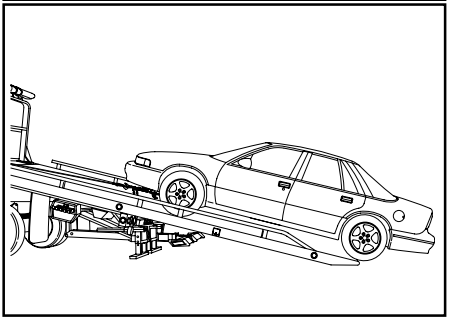
NEVER walk or climb on the deck surface.

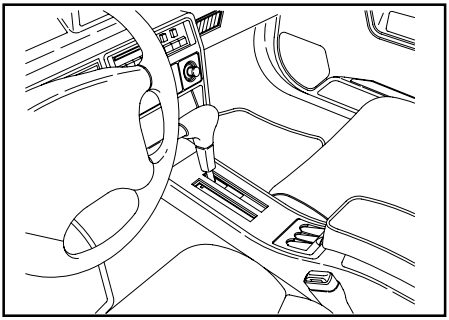


10. Raise the Rollback Control handle to slide the deck back. Slide the deck back until the approach plate makes firm contact with the ground. Make sure that the rear bumper and the approach plate are both in firm contact with the ground before loading so there is equal weight distribution between the rear bumper and the end of the deck.









11. Slowly lower the Winch Control handle to take-up any slack in the wire rope/cable to allow the front tie-downs to become slack and loose.

12. Remove the tie-downs from the front of the vehicle.

CAUTION:

NEVER walk or climb on the deck surface.

---

13. Raise the Winch Control handle and start unreeling the wire rope/cable from the winch. Unreel enough of the wire rope/cable from the winch to allow the vehicle to roll/slide off of the carrier deck.

WARNING:

Maintain a minimum of five (5) wraps of wire rope/cable on the winch drum at all times. Also maintain a uniform wrap of wire rope/cable on the drum to avoid crushing of the wire rope/cable.

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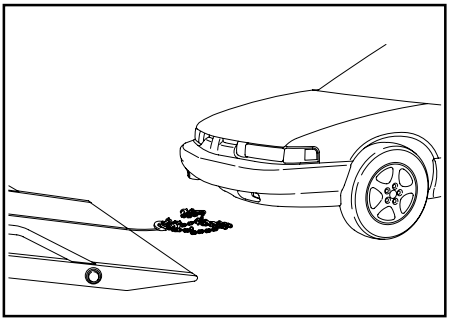
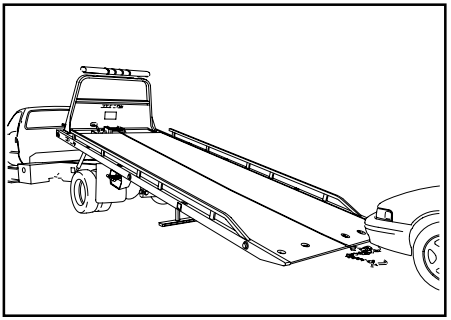
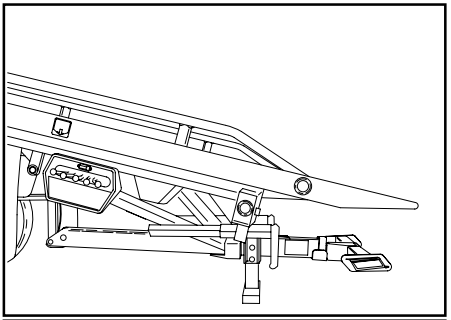
14. Set the vehicle's parking brake and put the transmission into Park.



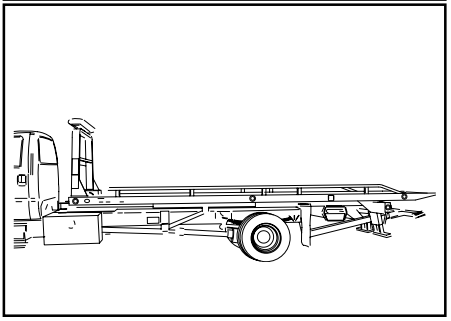
15. Remove the hook-up chains and wire rope/cable.



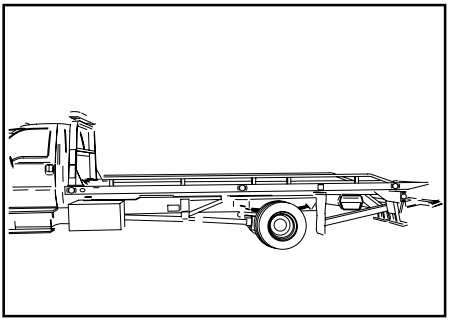
16. Lower the Winch Control handle and spool the wire rope/cable back onto the winch drum. Keep tension on the wire rope/cable so that the wire wraps properly on the winch spool to avoid birdnesting.



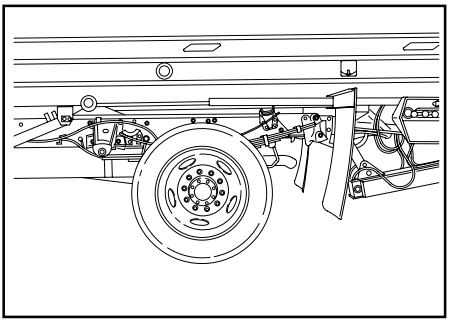
17. Lower the Rollback Control handle to move the deck forward. Align the arrow decal pointer on the side of the deck with the first control handle. **Lowering the deck too late may cause damage to the mechanical hold down.**



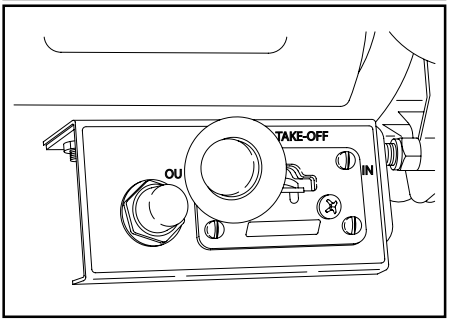
18. Lower the Tilt Control handle and lower the front of the deck to the subframe.



19. Lower the Rollback Control handle and move the deck completely forward until it engages the hold downs and into the transport position.

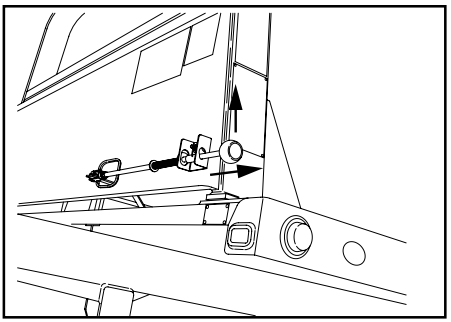


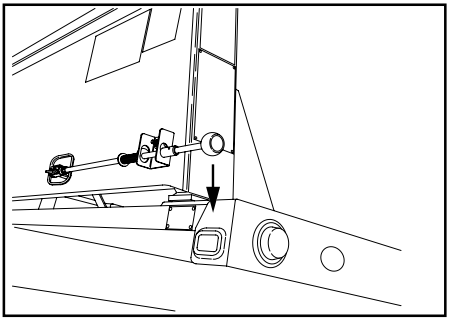
20. Remove the wheel chocks from the carrier's rear tires.

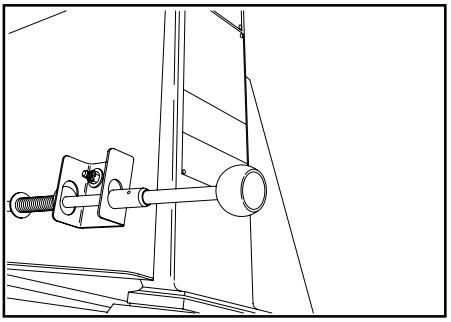


21. Disconnect the power take-off (PTO). Refer to PTO operator's manual. **NEVER TRAVEL WITH THE POWER TAKE-OFF CONTROL ENGAGED.** This could result in damage to the PTO unit and the recovery vehicle's transmission.

WINCH OPERATION - MANUAL REMOTE FREE-SPOOL







Follow these simple steps to disengage the winch:

1. To disengage the winch clutch, raise the Winch Control handle to run the winch in the reverse (reel out) direction until the load is off the wire rope/cable. **Never pull the free spool knob while the wire rope/cable is under load.** Raise and lift the free spool knob and pull it toward you.
2. Then lower the knob and release.
3. Look to make sure that the free spool knob is locked in the free spool position. The winch clutch is now disengaged and the wire rope/cable may be pulled off by hand.

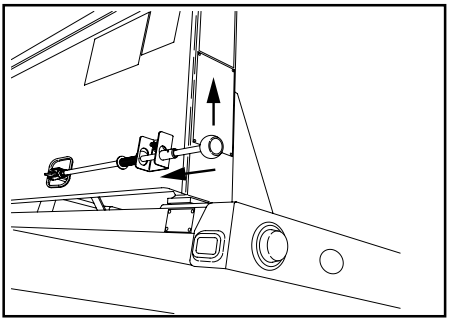
WARNING:

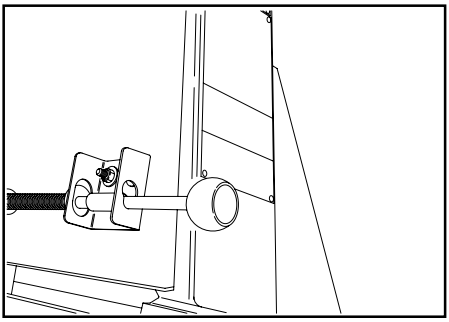
Maintain a minimum of five (5) wraps of wire rope/cable on the winch drum at all times. Also maintain a uniform wrap of wire rope/cable on the drum to avoid crushing of the wire rope/cable.

WARNING:

Always wear gloves when handling wire rope/cable.

Follow these simple steps to re-engage the winch:



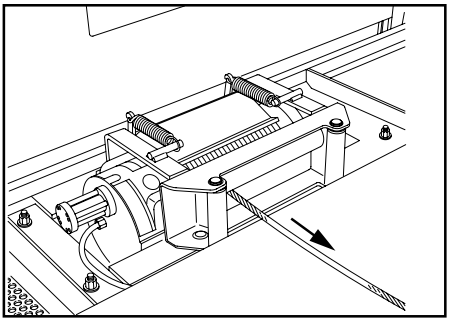


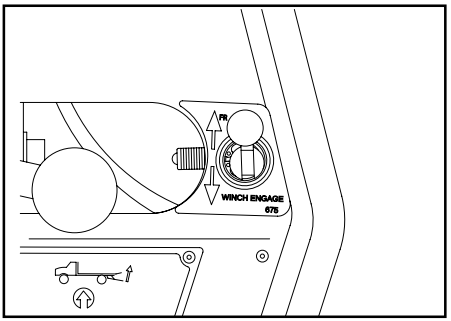
1. To re-engage the winch clutch, simply raise and lift the free spool knob and release. The free spool knob should spring back into the engaged position. Raise the Winch Control handle to run the winch in reverse (reel out) direction until the free spool snaps fully in position or until the winch drum starts turning.
2. Look to make sure that the free spool knob is locked in the engaged position. After the winch clutch is fully engaged, the winch is ready for winching.

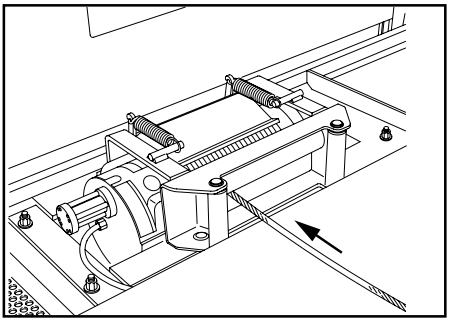
CAUTION:

Do not attempt to pull a load unless the winch free spool is completely engaged.

WINCH OPERATION - AIR REMOTE FREE-SPOOL







Follow these simple steps to disengage the winch:

1. To disengage the winch clutch, raise the Winch Control handle to run the winch in the reverse (reel out) direction until the load is off the wire rope/cable. **Never move the free spool lever while the wire rope/cable is under load.**
2. Move the free spool lever in the control station up into the free spool position.
3. Lower the Winch Control handle to run the winch in the forward (reel in) direction to disengage the clutch. The winch clutch is now disengaged and the wire rope/cable may be pulled off by hand.

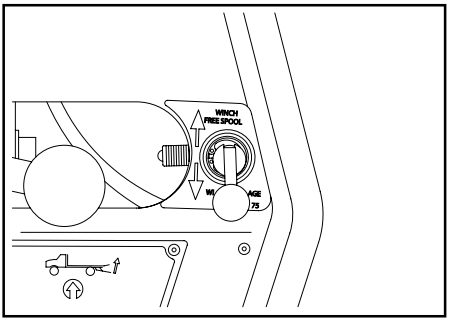
WARNING:

Maintain a minimum of five (5) wraps of wire rope/cable on the winch drum at all times. Also maintain a uniform wrap of wire rope/cable on the drum to avoid crushing of the wire rope/cable.

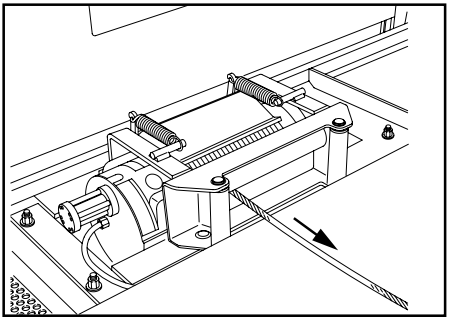
WARNING:

Always wear gloves when handling wire rope/cable.

Follow these simple steps to re-engage the winch:



1. To re-engage the winch clutch simply move the free spool lever in the control station down into the engage position.



2. Raise the Winch Control handle to run the winch in reverse (reel out) direction until the winch drum starts turning. After the winch clutch is fully engaged, the winch is ready for winching.

CAUTION:

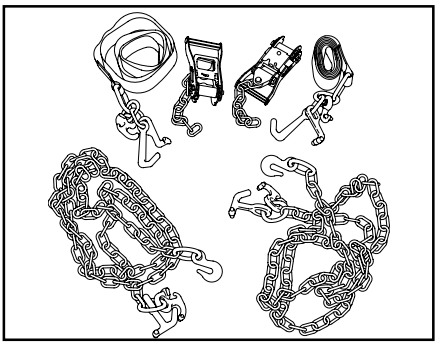
Do not attempt to pull a load unless the winch free spool is completely engaged.

SECURING VEHICLE

Each Standard Duty and Medium Duty Carrier is supplied with a set of high strength polyester web tie-down strap and chain assemblies. They are to be used to secure the vehicle to the carrier deck. **NEVER TOW A VEHICLE WITHOUT TIE-DOWNS INSTALLED.** *For specialty equipment other than vehicles, the user assumes all responsibility for choosing and providing the proper tie-down devices.*

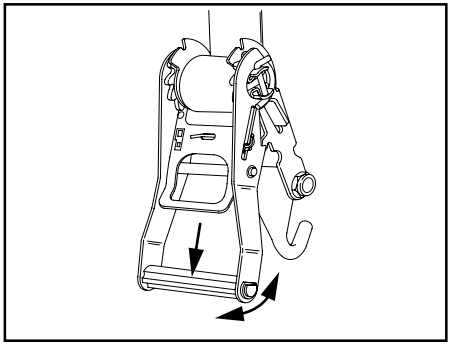
The tie-down strap and chain assembly is comprised of the following components:

1. (2) RTJ Hook Cluster Chains
2. (2) RTJ Hook Cluster Straps
3. (2) Ratchet Spool Mechanisms

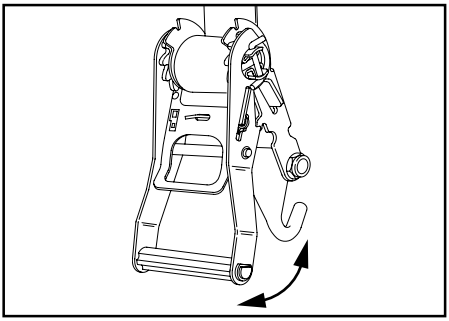


Follow these steps to properly install the tie-down strap and chain assemblies:

USING THE RATCHET SPOOL MECHANISM

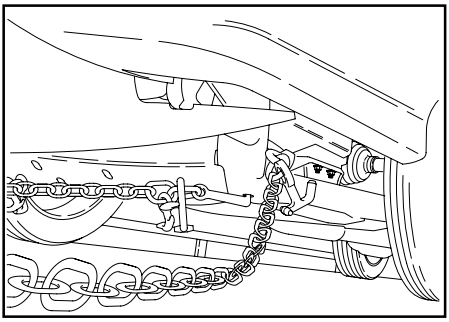


1. First set the spool into “free spool”. This is done by pulling the lock bar out and swinging the handle upward until it rests in the free spool notch and then simply pulling out the amount of strap required to fit over the tire.
2. Now pull on the lock bar and move it downward until it engages the ratchet teeth on the take up spool. By pushing and pulling the handle up and down, the strap will be wound onto the spool.

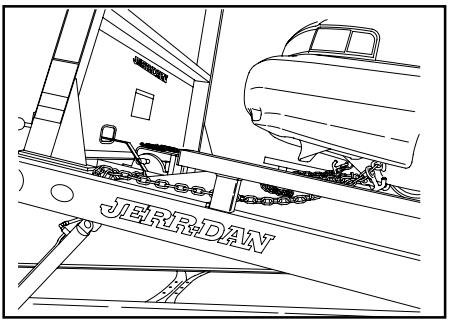


3. To release the ratchet, simply pull on the locking bar, disengaging the teeth and raise the handle to the “free spool” position.

INSTALLING THE FRONT TIE-DOWN CHAINS



1. Using the RTJ hook cluster chains, insert the appropriate hook into the vehicle frame tie down hole or slot. **Refer to the AAA or vehicle manufacturer's towing manual for the correct attachment points.**



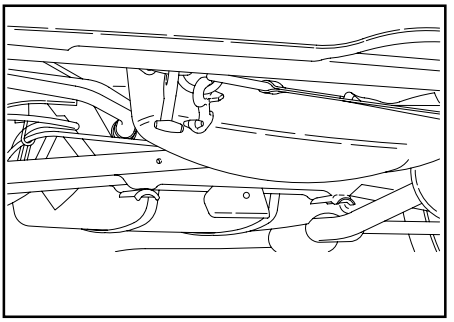
2. Insert the other end of the chain into the keyslot in the deck. Adjust the chain so that it is as tight as possible.

3. Repeat for the other side.

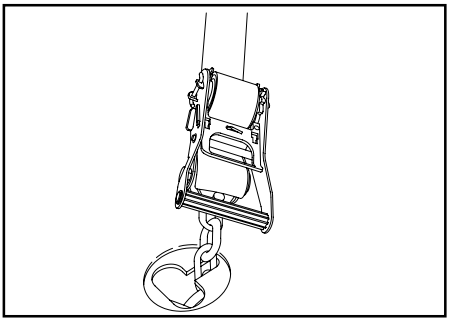
CAUTION:

NEVER walk or climb on the deck surface.

INSTALLING THE REAR TIE DOWN STRAPS

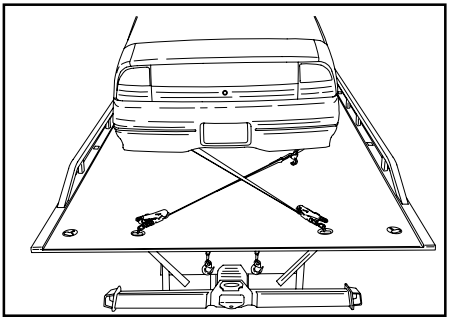


1. Using the RTJ hook cluster straps and ratchet spool mechanisms, insert the appropriate hook into the vehicle frame tie down hole or slot. **Refer to the AAA or vehicle manufacturer's towing manual for the correct attachment points.**



2. Insert the chain on the end of the ratchet into the keyslot in the deck. Adjust the chain so that it is as tight as possible. Using the ratchet, tighten the tie down strap.

3. Repeat for the other side.



NOTE:

The rear Tie-Downs should be crossed from right to left and left to right whenever possible.

CAUTION:

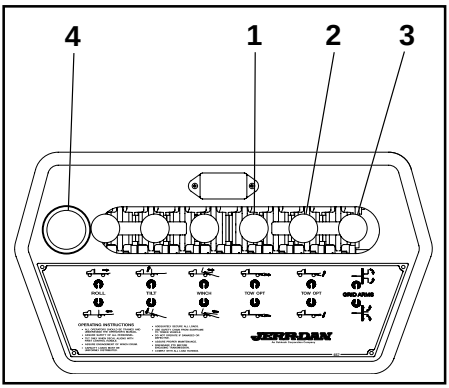
NEVER walk or climb on the deck surface.

"IRL" (INDEPENDENT RAISE/LOWER) WHEEL LIFT OPERATION

The optional wheel lift allows a second vehicle to be towed damage free on its own suspension by utilizing a wheel grid. The wheel lift cross bar may also be used as a conventional tow bar for badly damaged or heavier vehicles. **Refer to the AAA or vehicle manufacturer's towing manual for the correct towing procedures and attachment points.**

WARNING:

Because of the additional boom extension and load point of the towed vehicle, the wheel lift places more load on the rear axle and unloads the front axle more than a conventional tow bar. Overloading the wheel lift may result in unsafe steering and braking conditions and may damage truck frame. Never use the wheel lift without a vehicle on the deck. Single vehicle recovery must utilize the deck only.



Driver Side Control Station

The following controls are provided:

1. Tow Option Control - Fourth Handle Extend/Retract
2. Tow Option Control - Fifth Handle Raise/Lower
3. Grid Arms Control - Sixth Handle Open/Close (Hydraulic Grid Option)
4. System Pressure Gauge

   System Main Relief Pressure

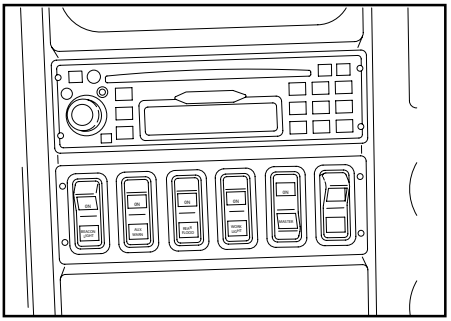
   2,400 - 2,600 psi

   Tilt Cylinder Port Relief Pressure*

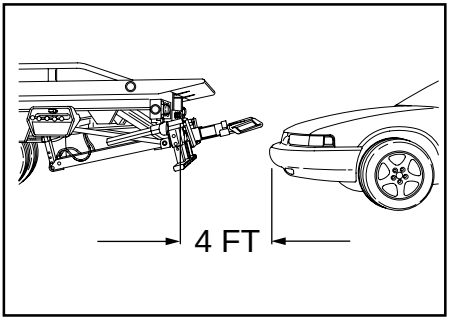
   1,400 - 1,600 psi

   *Medium/Heavy Duty Models and Special Equipped

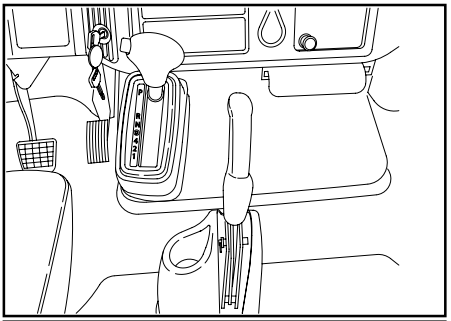
   Standard Duty Models



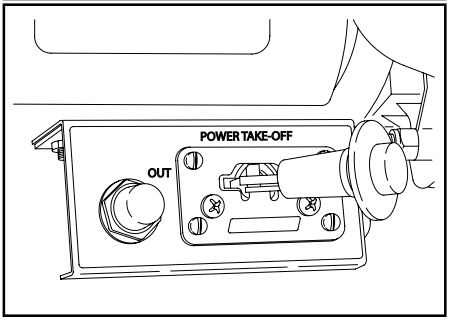
1. Turn on the safety and work lights. (Switches are located on the switch panel in the dash.)



2. Position the rear of the carrier about 4 feet from the vehicle you intend to load. Make sure you are in line with the vehicle.



3. Place the carrier's transmission gear selector into Neutral or Park and set the parking brakes.

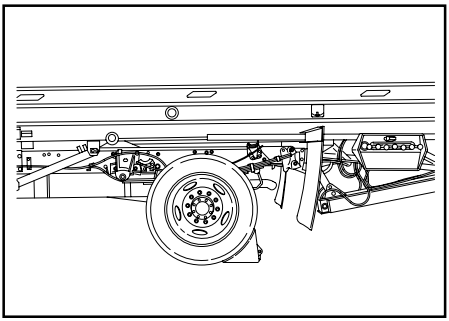


4. Engage the power take-off (PTO). Refer to PTO operator's manual. **NEVER TRAVEL WITH THE POWER TAKE-OFF CONTROL ENGAGED.** This could result in damage to the PTO unit and the recovery vehicle's transmission.

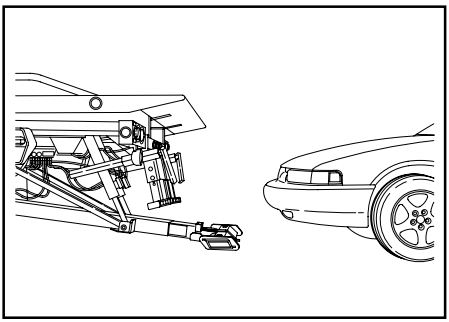
5. Adjust the electronic or manual throttle control to set the engine speed to approximately 1000-1200 R.P.M. Refer to chassis operator's manual for proper operation of the auxiliary throttle. If your chassis is equipped with the remote throttle up option from the chassis manufacturer there is no need to set the throttle up control in the cab because the throttle will automatically increase when any of the carrier hydraulic functions are operated.

CAUTION:

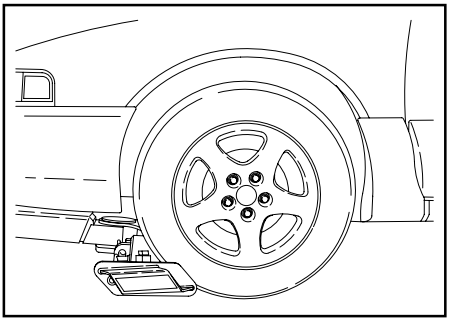
NEVER exceed 1400 R.P.M. When your hook up is complete, reset engine idle to normal.



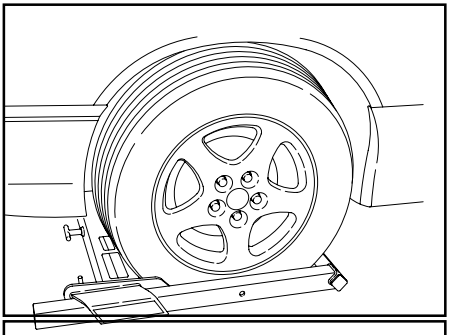
6. Block the carrier's rear tires with wheel chocks to prevent accidental carrier movement. Check the area around the carrier and the vehicle to be loaded for obstructions or hazards.



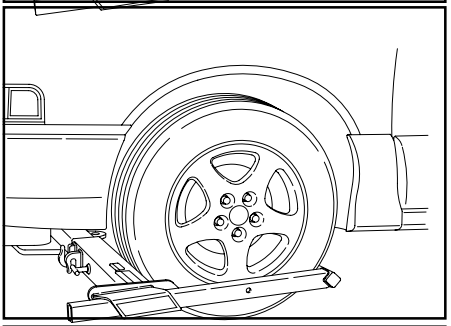
7. Lower the Tow Option Raise/Lower Control handle to lower the wheel lift to about 1-1/2" from the ground. Make sure that it will clear the underside of the vehicle when the wheel lift boom is extended.



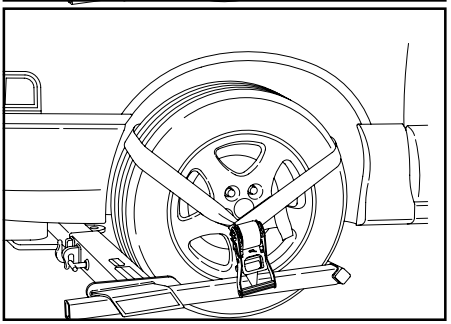
8. Raise the Tow Option Extend/ Retract Control handle to extend the wheel lift under the vehicle. Make sure all undercarriage parts are cleared and that the ramp portion of the of grid is in contact with the tires.



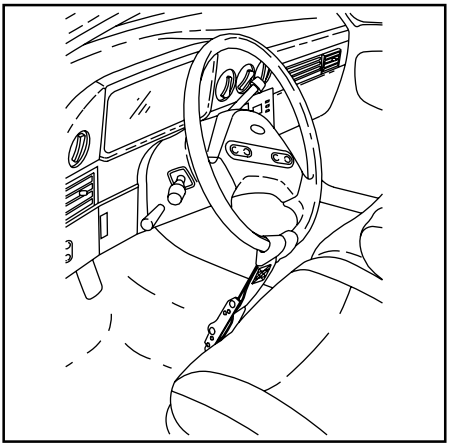
9. Load the vehicle onto the wheel lift. **(See Wheel Grid instructions)**



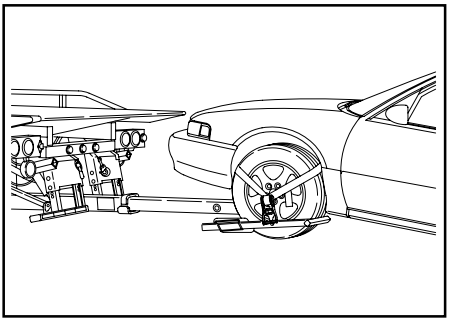
10. Raise the Tow Option Raise/Lower Control handle to raise the wheel lift until the vehicle's tires have cleared the ground.



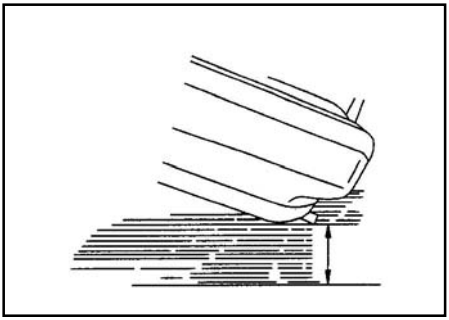
11. Install tie-down straps to secure the wheels in the grid. **(See Tie-Down Straps instructions)**



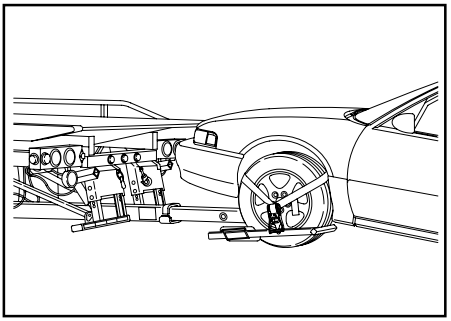
12. Place the vehicle's transmission in Neutral and release the parking brake. Make sure that the wheels are straight and install a steering wheel strap. It is recommended that the steering wheel be secured by a steering wheel strap for any tow.

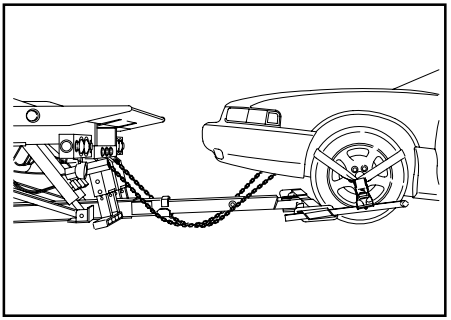


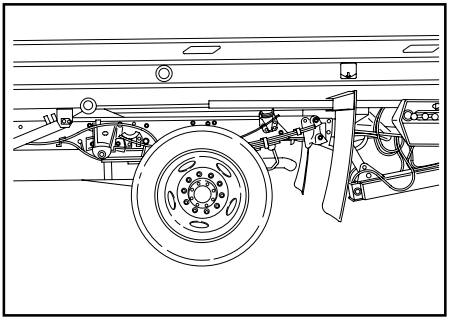
13. Raise the Tow Option Raise/Lower Control handle to raise the wheel lift until the vehicle is in the final towing position.

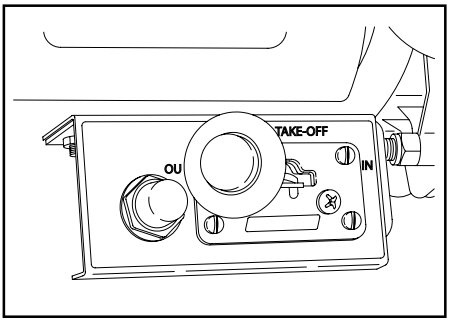


14. Make sure that the far end of the vehicle has enough ground clearance. It is possible to set the rear of a front lifted vehicle completely on the ground. Take irregular road surfaces into consideration. Make sure that there are no under body components of the vehicle in contact with the L-Arms or wheel grid device. Readjust if necessary.









15. Lower the Tow Option Extend/ Retract Control handle to retract the wheel lift until the vehicle is about 3 to 4 feet from the back of the truck. Leave enough room to maneuver around corners without corner binding or causing contact between the (2) vehicles. Be sure that the boom is extended adequately to ensure unobstructed crossbar pivoting.
16. Be sure to maintain sufficient clearances with the bottom of the vehicle.
17. Attach the safety chains and magnetic towing lights. The safety chains are located in the chain boxes at the rear of the recovery vehicle. **Safety chains must be crossed from one side of the carrier vehicle to the opposite side of the vehicle.**
18. Remove the wheel chocks from the carrier's rear tires.
19. Disconnect the power take-off (PTO). Refer to PTO operator's manual. **NEVER TRAVEL WITH THE POWER TAKE-OFF CONTROL ENGAGED.** This could result in damage to the PTO unit and the recovery vehicle's transmission.
20. Use the reverse order for unloading.

WARNING:

Properly secure the vehicle to the wheel grid using tie-down straps. Tie-down straps should be tightened periodically during the tow as the tires settle into the grid from towing.

WARNING:

Properly secure the vehicle using safety chains from the vehicle to the carrier subframe.

WARNING:

The wheel lift is designed to transport a second vehicle. Never tow a vehicle on the wheel lift without a vehicle on the deck. Unsafe braking and steering conditions may result.

CAUTION:

After unloading the vehicle, fully retract the wheel lift boom before operating any deck functions.

CAUTION:

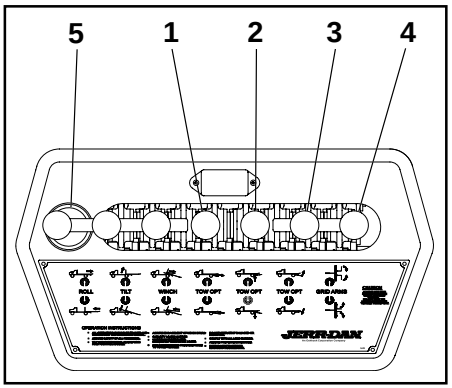
Always store the L-Arms in the storage location provided when not in use. Do not store the L-Arms in the wheel grids.

"ZOD" (ZERO DEGREE) WHEEL LIFT OPERATION

The optional wheel lift allows a second vehicle to be towed damage free on its own suspension by utilizing a wheel grid. The wheel lift cross bar may also be used as a conventional tow bar for badly damaged or heavier vehicles. **Refer to the AAA or vehicle manufacturer's towing manual for the correct towing procedures and attachment points.**

WARNING:

Because of the additional boom extension and load point of the towed vehicle, the wheel lift places more load on the rear axle and unloads the front axle more than a conventional tow bar. Overloading the wheel lift may result in unsafe steering and braking conditions and may damage truck frame. Never use the wheel lift without a vehicle on the deck. Single vehicle recovery must utilize the deck only.



Driver Side Control Station

The following controls are provided:

1. Tow Option Control - Fourth Handle Extend/Retract
2. Tow Option Control - Fifth Handle "ZOD" - Raise/Lower
3. Tow Option Control - Sixth Handle Raise/Lower
4. Grid Arms Control - Seventh Handle Open/Close (Hydraulic Grid Option)
5. System Pressure Gauge

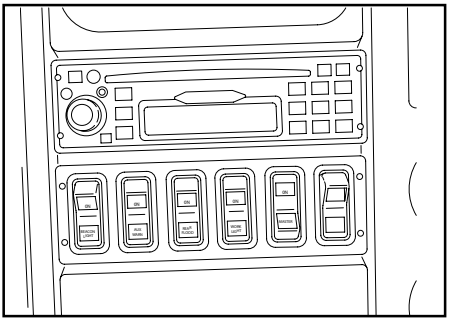
   System Main Relief Pressure

   2,400 - 2,600 psi

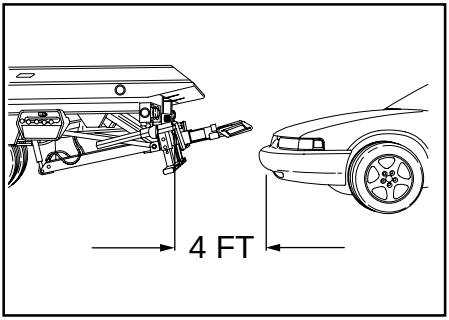
   Tilt Cylinder Port Relief Pressure*

   1,400 - 1,600 psi

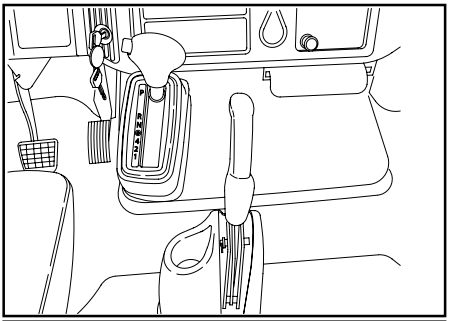
   *Medium/Heavy Duty Models and Special Equipped Standard Duty Models



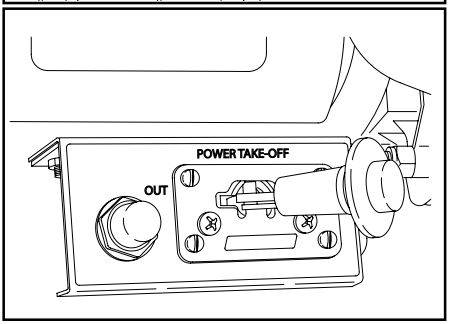
1. Turn on the safety and work lights. (Switches are located on the switch panel in the dash.)



2. Position the rear of the carrier about 4 feet from the vehicle you intend to load. Make sure you are in line with the vehicle.



3. Place the carrier's transmission gear selector into Neutral or Park and set the parking brakes.

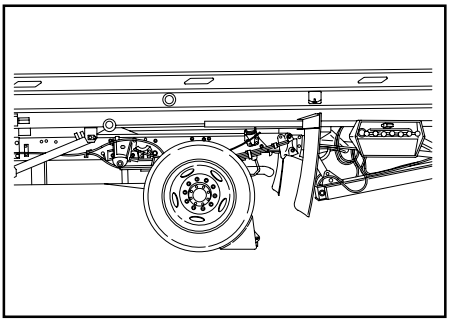


4. Engage the power take-off (PTO). Refer to PTO operator's manual. **NEVER TRAVEL WITH THE POWER TAKE-OFF CONTROL ENGAGED.** This could result in damage to the PTO unit and the recovery vehicle's transmission.

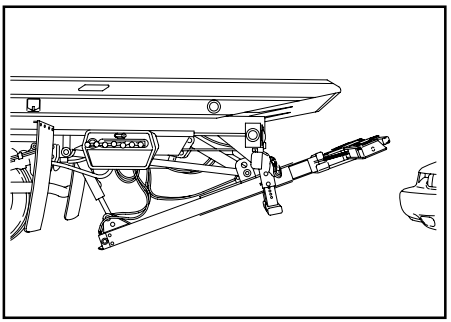
5. Adjust the electronic or manual throttle control to set the engine speed to approximately 1000-1200 R.P.M. Refer to chassis operator's manual for proper operation of the auxiliary throttle. If your chassis is equipped with the remote throttle up option from the chassis manufacturer there is no need to set the throttle up control in the cab because the throttle will automatically increase when any of the carrier hydraulic functions are operated.

CAUTION:

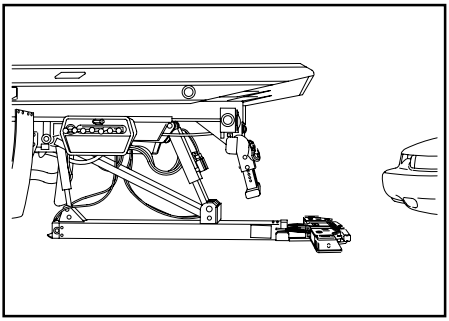
NEVER exceed 1400 R.P.M. When your hook up is complete, reset engine idle to normal.



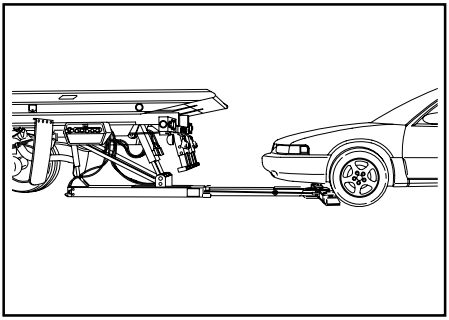
6. Block the carrier's rear tires with wheel chocks to prevent accidental carrier movement. Check the area around the carrier and the vehicle to be loaded for obstructions or hazards.



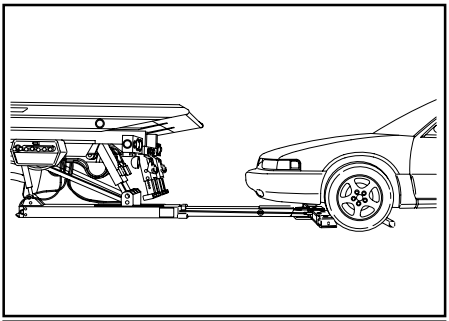
7. Lower the Tow Option Raise/ Lower Control handle to lower the front end of the wheel lift to about 1-1/2" from the ground. Make sure that it will clear the underside of the vehicle when the wheel lift boom is extended.



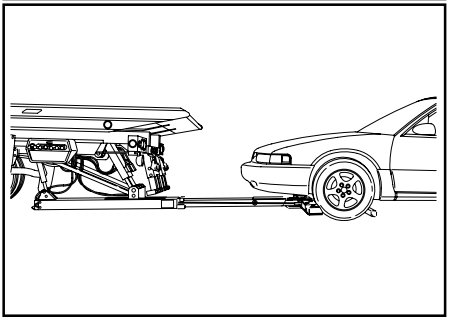
8. Lower the Tow Option Raise/ Lower Control handle to lower the back end of the wheel lift to about 1-1/2" from the ground so that it will clear the underside of the vehicle when the wheel lift boom is extended.



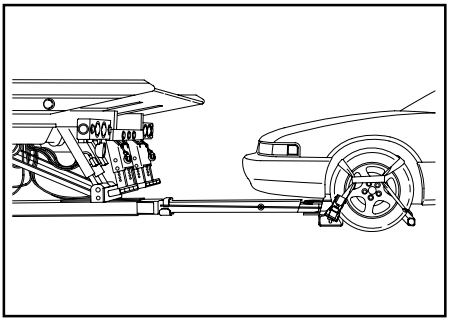
9. Raise the Tow Option Extend/ Retract Control handle to extend the wheel lift under the vehicle. Make sure all undercarriage parts are cleared and that the ramp portion of the of grid is in contact with the tires.



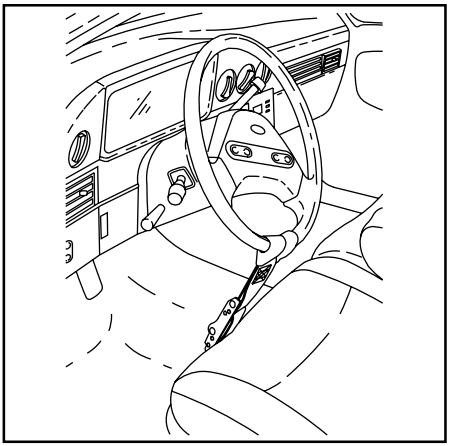
10. Load the vehicle onto the wheel lift. **(See Wheel Grid instructions)**



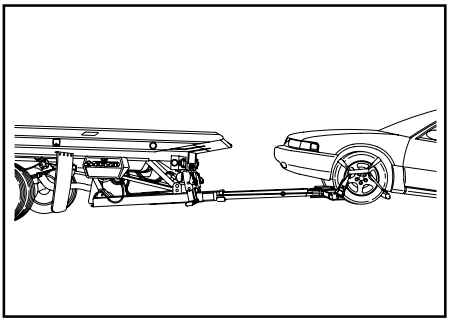
11. Raise the Tow Option Raise/ Lower Control handle to raise the back end of the wheel lift until the vehicle's tires have cleared the ground.



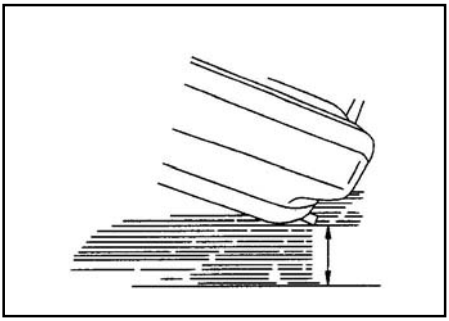
12. Install tie-down straps to secure the wheels in the grid. **(See Tie-Down Straps instructions)**



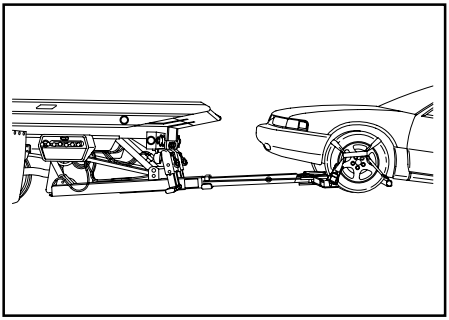
13. Place the vehicle's transmission in Neutral and release the parking brake. Make sure that the wheels are straight and install a steering wheel strap. It is recommended that the steering wheel be secured by a steering wheel strap for any tow.



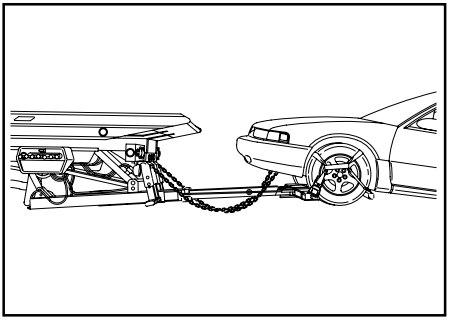
14. Raise both of the Tow Option Raise/Lower Control handles to raise the wheel lift until the vehicle is in the final towing position.



15. Make sure that the far end of the vehicle has enough ground clearance. It is possible to set the rear of a front lifted vehicle completely on the ground. Take irregular road surfaces into consideration. Make sure that there are no under body components of the vehicle in contact with the L-Arms or wheel grid device. Readjust if necessary.

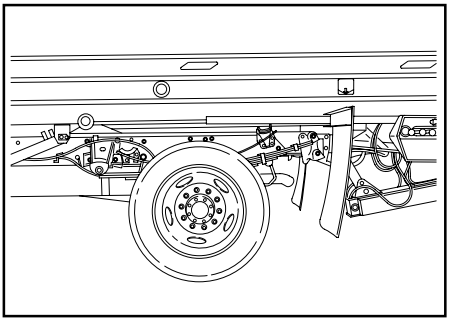


16. Lower the Tow Option Extend/ Retract control handle to retract the wheel lift until the vehicle is about 3 to 4 feet from the back of the truck. Leave enough room to maneuver around corners without corner binding or causing contact between the (2) vehicles. Be sure that the boom is extended adequately to ensure unobstructed crossbar pivoting.

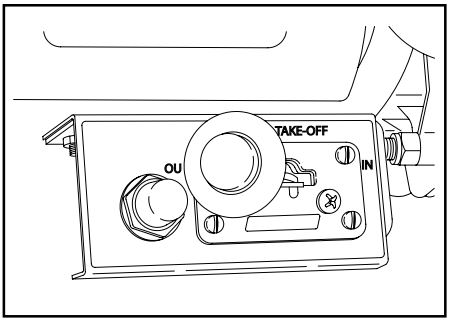


17. Be sure to maintain sufficient clearances with the bottom of the vehicle.

18. Attach the safety chains and magnetic towing lights. The safety chains are located in the chain boxes at the rear of the recovery vehicle. **Safety chains should be must from one side of the carrier vehicle to the opposite side of the casualty vehicle.**



19. Remove the wheel chocks from the carrier's rear tires.



20. Disconnect the power take-off (PTO). Refer to PTO operator's manual. **NEVER TRAVEL WITH THE POWER TAKE-OFF CONTROL ENGAGED.** This could result in damage to the PTO unit and the recovery vehicle's transmission.
21. Use the reverse order for unloading.

WARNING:

Properly secure the vehicle to the wheel grid using tie-down straps. Tie-down straps should be tightened periodically during the tow as the tires settle into the grid from towing.

WARNING:

Properly secure the vehicle using safety chains from the vehicle to the carrier subframe.

WARNING:

The wheel lift is designed to transport a second vehicle. Never tow a vehicle on the wheel lift without a vehicle on the deck. Unsafe braking and steering conditions may result.

CAUTION:

After unloading the vehicle, fully retract the wheel lift boom before operating any deck functions.

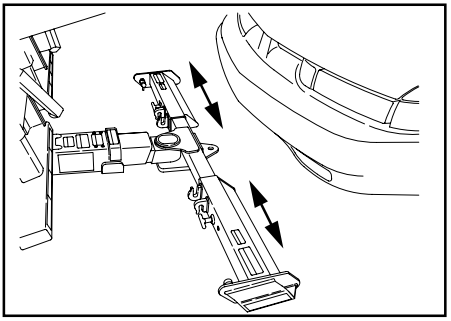
CAUTION:

Always store the L-Arms in the storage location provided when not in use. Do not store the L-Arms in the wheel grids.

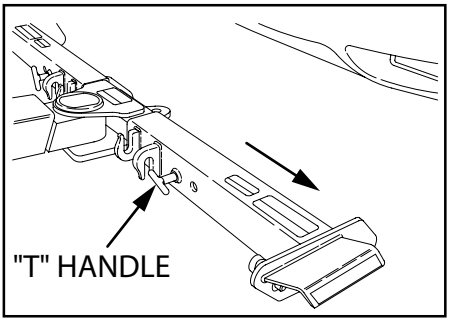
CAUTION:

All products are subject to age, wear and deterioration, all of which cause a reduction in the products breaking strength capacity. It is recommended that all products be regularly inspected. Any worn, deformed, misused or overloaded products should be replaced immediately.

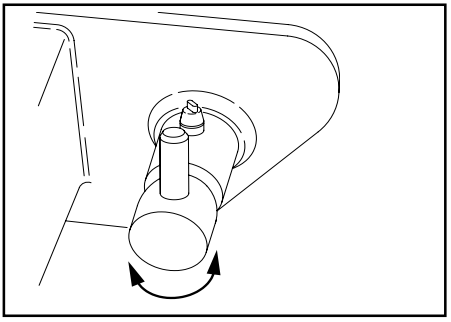
"L" ARM GRID OPERATION



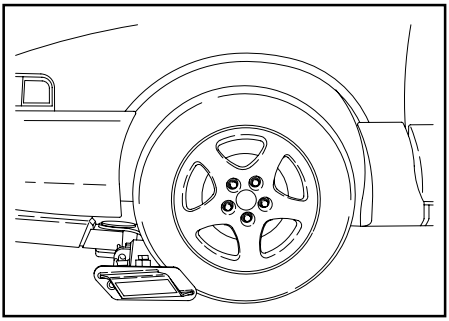
1. Set the grid width as required for the casualty vehicle to be towed.

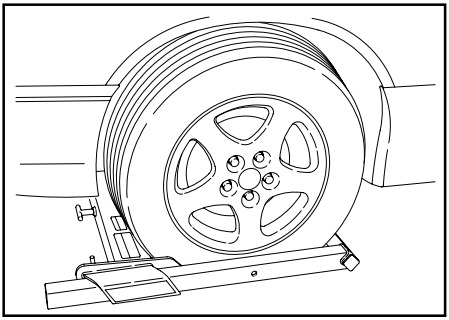


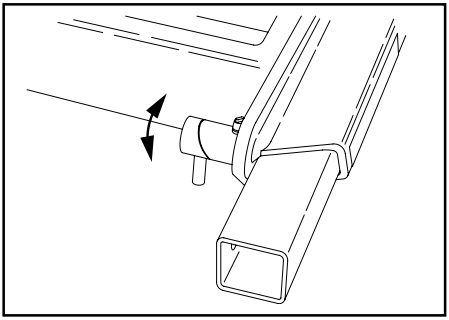
2. To set the grid width, loosen the "T" handles on the front of the grid arms and pull out. Be sure both grids are as close to the center of the boom as possible, and wide enough to allow the L-Arms to slide into their channels. Tighten the "T" handles to secure the grids.



3. Retract the "Cam" handle locking pin on the grid by turning it 180°. It should remain in the open position.





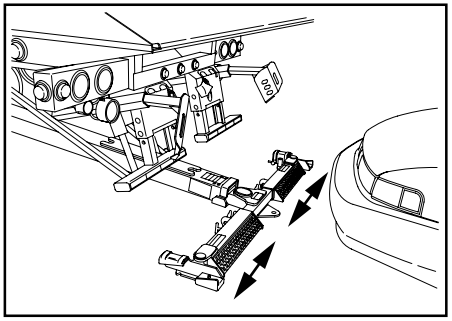


4. Extend the lift arm under the casualty vehicle. Make sure that all under carriage parts are cleared and that the front portion of the grid is in contact with both tires. Lower the grid fully to the ground. **There is no reason for the operator to get under the casualty vehicle.**

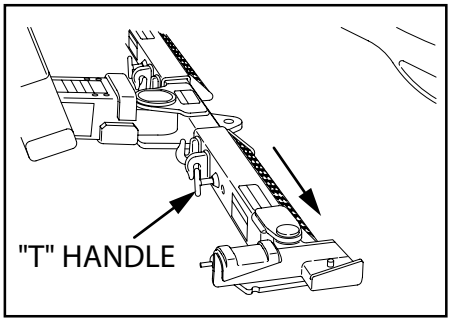
5. Visually inspect the tire to grid contact before proceeding.

6. Take the L-Arms and slide them into the channels on the side of the grid. Make sure that they are resting snugly against the tires, with the L-Arms in close contact with the tires. Then reset the locking pin by turning the "Cam" handle back to the original position. **Be sure that the pin seats in one of the holes.** The tires are now confined front and back.

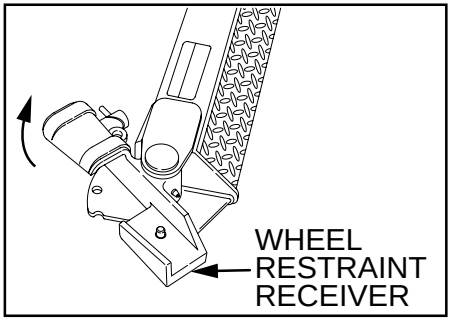
"T37" PIVOTING GRID OPERATION



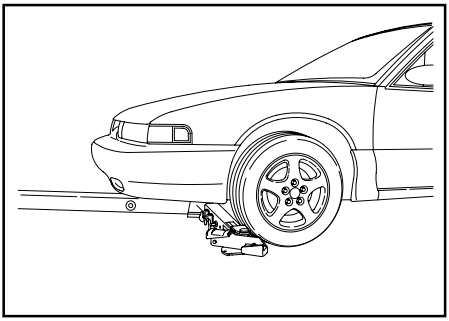
1. Set the grid width as required for the casualty vehicle to be towed.

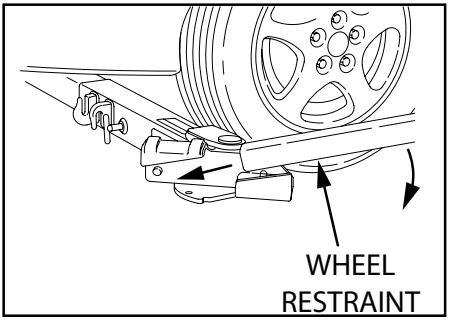


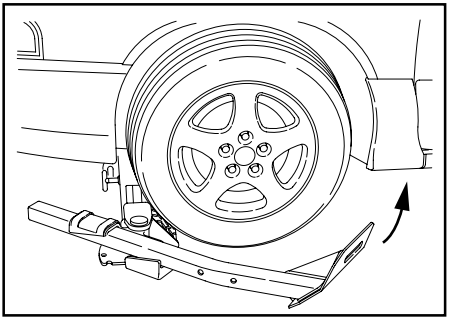
2. To set the grid width, loosen the "T" handles on the front of the grid arms and pull out. Be sure both grids are as close to the center of the boom as possible, and wide enough to allow the wheel restraints to fit into their receivers. Tighten the "T" handles to secure the grids.

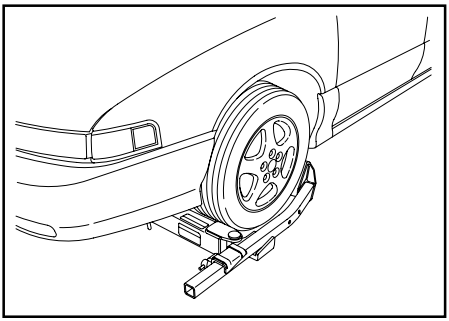


3. Pivot the wheel restraint receivers on the end of the grid arms outward by lifting up on the receiver. Rotate the "Cam" handles on the receivers 180° to the open position for easier placement of the restraint into the receiver.









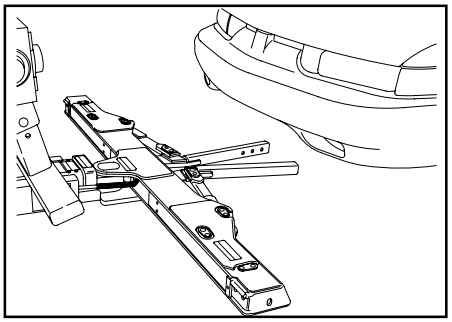
4. Extend the lift arm under the casualty vehicle. Make sure that all under carriage parts are cleared and that the front portion of the grid is in contact with both tires. Lower the grid fully to the ground. **There is no reason for the operator to get under the casualty vehicle.**

5. Visually inspect the tire to grid contact before proceeding.

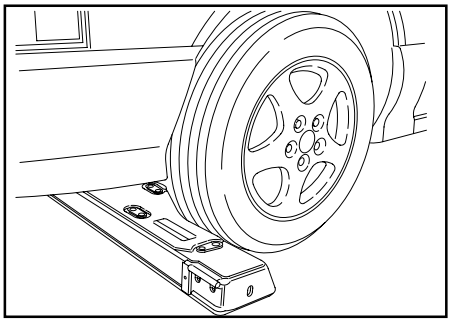
6. Take the wheel restraints and place them into their receivers on the side of the grid. The restraints should be placed in a position as close as possible to fit the tires. **Be sure that the holes in the bottom of the restraints lock over the retaining pin on the receivers.**

7. Pivot the receivers and wheel restraints inline with the tires. Make any adjustments to the wheel restraints making sure that you clear body and undercarriage components. **Be sure that the holes in the bottom of the restraints lock over the retaining pin on the receivers.** Rotate the "Cam" handles back to their original positions making sure that they fully retract to the closed position. The tires are confined front and back. Readjust the wheel restraints to insure that they are resting snugly against the tires.

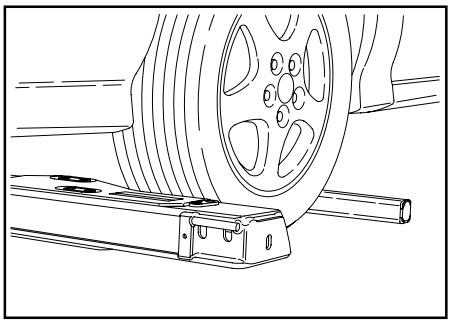
HYDRAULIC GRID OPERATION



1. Lower the grid arms open/close control handle to unfold and open the arms for loading.



2. Extend the lift arm under the casualty vehicle being sure that all under carriage parts are cleared and that the front portion of the grid is in contact with both tires. Lower the grid fully to the ground. **Never get under the casualty vehicle.**
3. Visually inspect the tire to grid contact before proceeding.



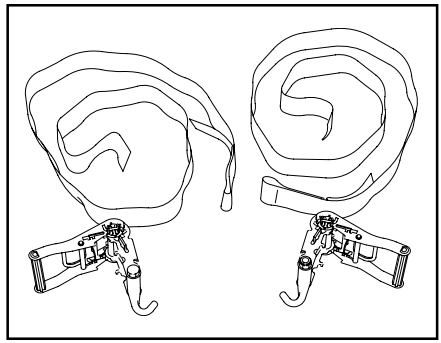
4. Lower the grid arms open/close control handle again to fully close the arms around the casualty vehicle's tires. **Make sure that the arm is fully closed and in its over-center, locked, position.**

TIE-DOWN STRAPS - L-ARM GRID

The L-Arm grid is supplied with a set of high-strength polyester web tie-down straps. They are to be used to secure wheels of the towed vehicle to the wheel lift grid. **NEVER TOW A VEHICLE WITHOUT THE TIE-DOWN STRAPS INSTALLED.**

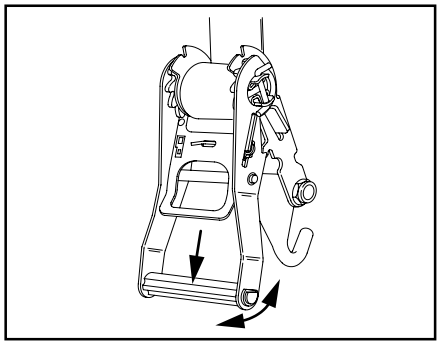
The tie-down strap assembly is comprised of 2 basic components:

1. (2) The Strap/Hook Assemblies
2. (2) The Ratchet Spool Mechanisms

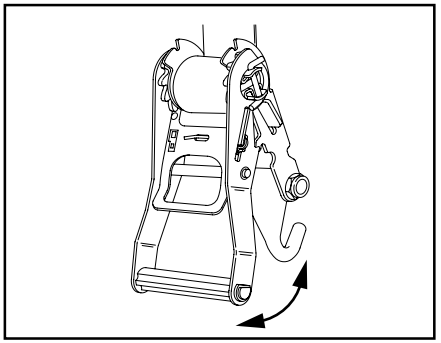


Follow these steps to properly install the tie-down straps:

USING THE RATCHET SPOOL MECHANISM

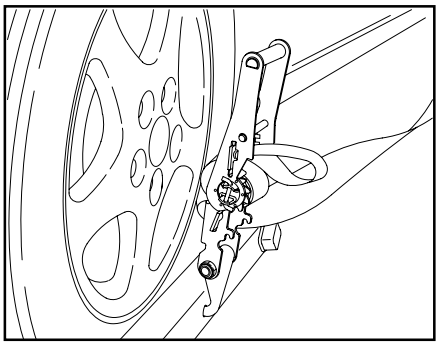


1. First set the spool into “free spool”. This is done by pulling the lock bar out and swinging the handle upward until it rests in the free spool notch and then simply pulling out the amount of strap required to fit over the tire.
2. Now pull on the lock bar and move it downward until it engages the ratchet teeth on the take-up spool. By pushing and pulling the handle up and down, the strap will be wound onto the spool.

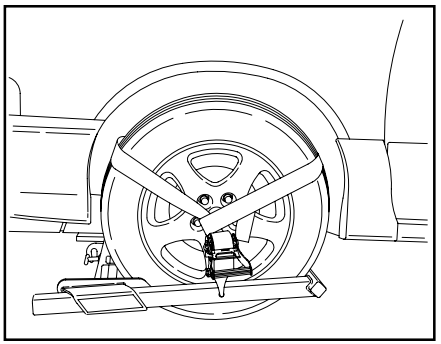


3. To release the ratchet, simply pull on the locking bar, disengaging the teeth and raise the handle to the “free spool” position.

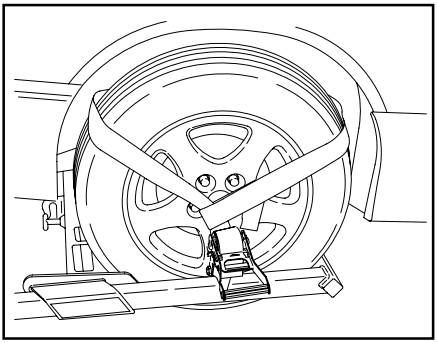
INSTALLING THE TIE DOWN STRAPS



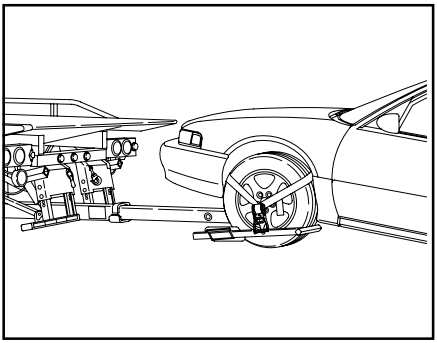
1. With the vehicle lifted just barely off the ground, attach the strap to the L-Arm. Be sure the hook on the ratchet is securely seated in the L-Arm.



2. Set the ratchet spool in "free spool" position and pull the webbed strap out and form a loop which will wrap around the tire. Be sure the loop is over a minimum of 1/3 of the tire.



3. Take up the slack in the strap by ratcheting the take-up spool arm. Continue until the tires show some compression. Repeat for other side.



4. Raise the wheel grid to the towing position. **RE-TIGHTEN THE RATCHET PERIODICALLY AS THE TIRE SETTLES IN GRID FROM TOWING.**

NOTE:

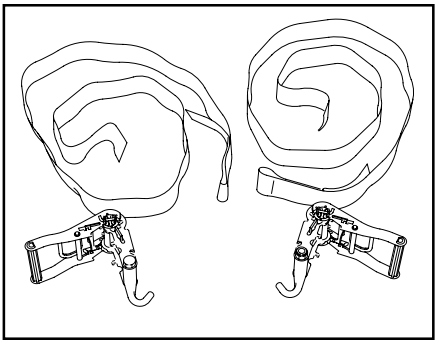
Never tow a vehicle without tire tie-down straps and safety chains installed.

TIE-DOWN STRAPS - "T37" PIVOTING GRID

The "T37" pivoting grid is supplied with a set of high-strength polyester web tie-down straps. They are to be used to secure wheels of the towed vehicle to the wheel lift grid. **NEVER TOW A VEHICLE WITHOUT THE TIE-DOWN STRAPS INSTALLED.**

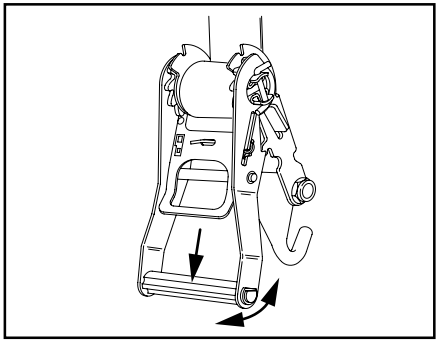
The tie-down strap assembly is comprised of 2 basic components:

1. (2) The Strap/Hook Assemblies
2. (2) The Ratchet Spool Mechanisms

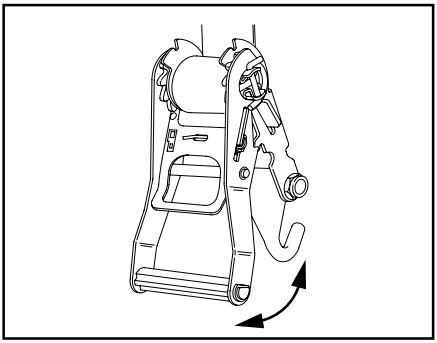


Follow these steps to properly install the tie-down straps:

USING THE RATCHET SPOOL MECHANISM

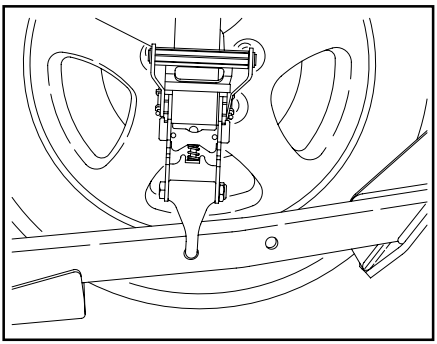


1. First set the spool into “free spool”. This is done by pulling the lock bar out and swinging the handle upward until it rests in the free spool notch and then simply pulling out the amount of strap required to fit over the tire.
2. Now pull on the lock bar and move it downward until it engages the ratchet teeth on the take-up spool. By pushing and pulling the handle up and down, the strap will be wound onto the spool.

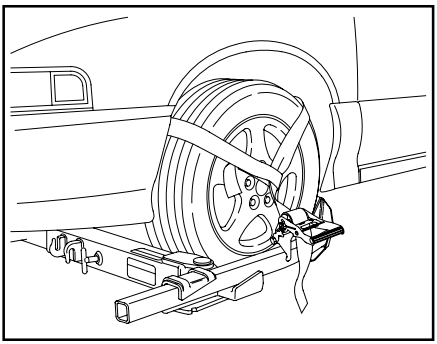


3. To release the ratchet, simply pull on the locking bar, disengaging the teeth and raise the handle to the “free spool” position.

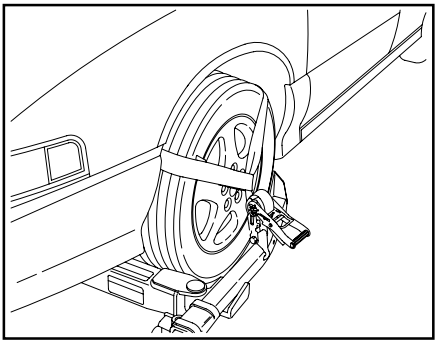
INSTALLING THE TIE-DOWN STRAPS

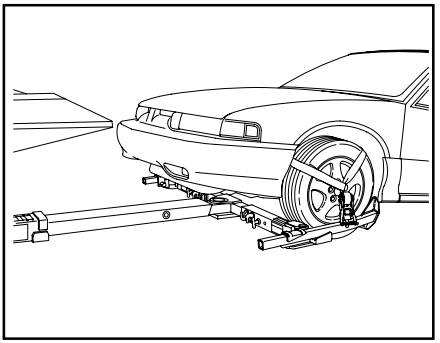


1. With the vehicle lifted just barely off the ground, attach the strap to the wheel restraints. Be sure the hook on the ratchet is securely seated in the wheel restraint.



2. Set the ratchet spool in "free spool" position and pull the webbed strap out and form a loop which will wrap around the tire. Be sure the loop is over a minimum of 1/3 of the tire.





3. Take up the slack in the strap by ratcheting the take-up spool arm. Continue until the tires show some compression. Repeat for other side.

4. Raise the wheel grid to the towing position. **RE-TIGHTEN THE RATCHET PERIODICALLY AS THE TIRE SETTLES IN GRID FROM TOWING.**

NOTE:

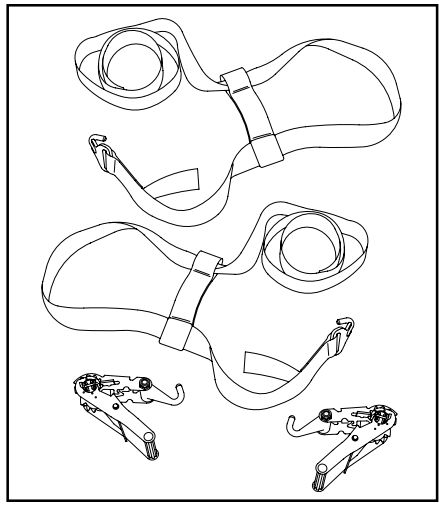
Never tow a vehicle without tire tie-down straps and safety chains installed.

TIE-DOWN STRAPS - HYDRAULIC GRID

The hydraulic grid is supplied with a set of high-strength polyester web tie-down straps. They are to be used to secure the wheels of the towed vehicle to the wheel grid. **NEVER TOW A VEHICLE WITHOUT THE TIE-DOWN STRAPS INSTALLED.**

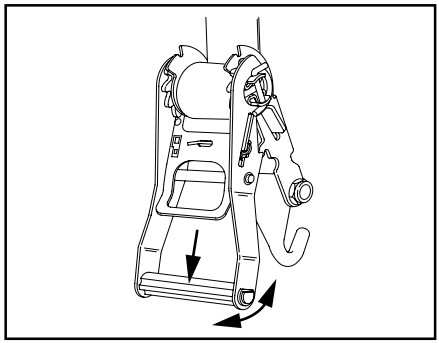
The tie-down strap assembly is comprised of 2 basic components:

1. (2) The Strap/Hook Assemblies
2. (2) The Ratchet Spool Mechanisms

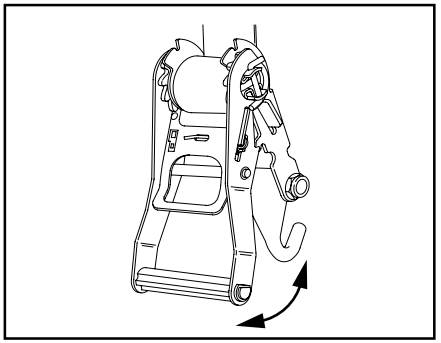


Follow these steps to properly install the tie-down straps:

USING THE RATCHET SPOOL MECHANISM

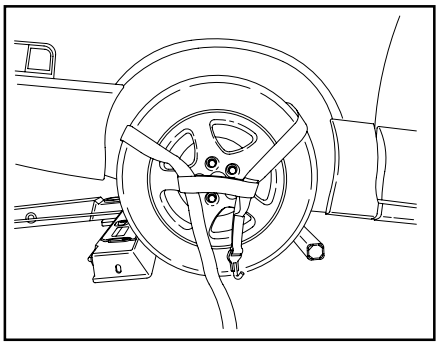


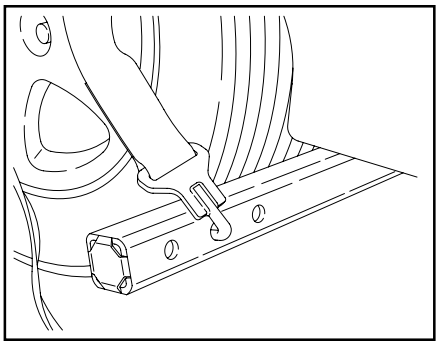
1. First set the spool into “free spool”. This is done by pulling the lock bar out and swinging the handle upward until it rests in the free spool notch and then simply pulling out the amount of strap required to fit over the tire.
2. Now pull on the lock bar and move it downward until it engages the ratchet teeth on the take-up spool. By pushing and pulling the handle up and down, the strap will be wound onto the spool.



3. To release the ratchet, simply pull on the locking bar, disengaging the teeth and raise the handle to the “free spool” position.

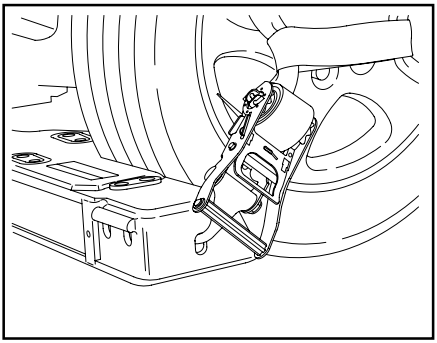
INSTALLING THE TIE-DOWN STRAPS



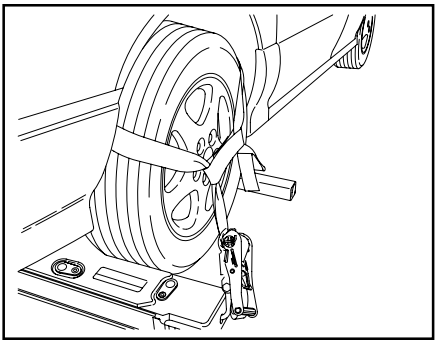


1. With the vehicle lifted just barely off the ground, insert the end of the strap through the sewn loop on the other end of the strap to form a loop. Put the loop over the tire as shown with the strap resting on the tire at the ten o’clock and two o’clock positions. Place the choker strap across the center of the tire.

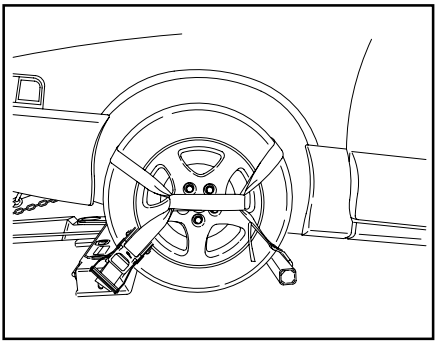
2. Place the rear hook of the strap assembly into a hole on the back side of the grid arm. Use the hole that is closest to the tire.



3. Place the ratchet hook of the strap assembly into a hole on the front side of the grid arm. Use the hole that is closest to the tire.



4. Take up the slack in the strap by ratcheting the take-up spool arm. Continue until the tires show some compression. Repeat for other side.



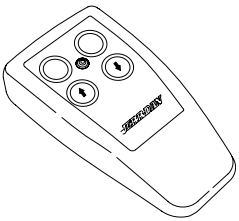
5. Raise the wheel grid to the towing position. **RE-TIGHTEN THE RATCHET PERIODICALLY AS THE TIRE SETTLES IN GRID FROM TOWING.**

NOTE:

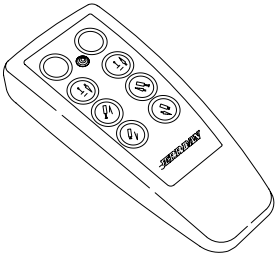
Never tow a vehicle without tire tie-down straps and safety chains installed.

HAND HELD WIRELESS REMOTE

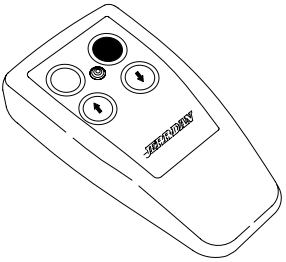
The hand held wireless remote controller is an option available for any or all of your carriers hydraulic functions.



Single Function Controller

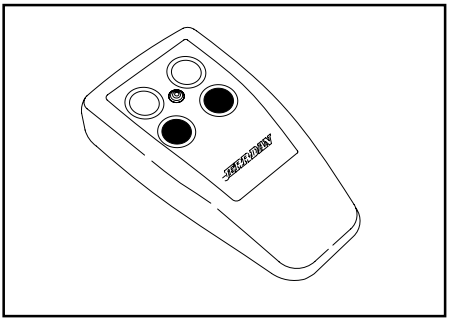


Multi Function Controller

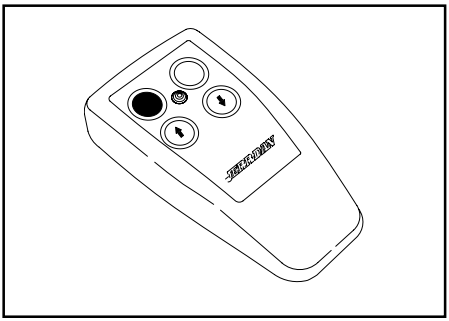


Follow these simple steps to operate the controller:

1. With the trucks engine running and the PTO engaged, press the green button on the hand controller to turn the power on to the hand controller. The red light on the controller will illuminate and flash.



2. Depress the appropriate yellow button on the hand controller for the desired funtion(s). The red light will stop flashing whenever a function is being operated.



3. To turn off the power to the hand controller, simply press the red button. The red light will stop illuminating.

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MAINTENANCE AND LUBRICATION

Your Jerr-Dan carrier has been designed to give you excellent service and long life, but like all equipment, it requires proper and periodic maintenance. The truck chassis itself is on a maintenance schedule recommended by the manufacturer. Follow these guidelines and protect your vehicle warranty. There are a number of different lubricants used on your carrier. The following Lubricant Chart shows the proper lubricant and the most common brands and specification which meet the requirements.

Use only safe practices when maintaining this equipment. Always shut off the engine before reaching into pinch areas.

Inspect your vehicle and wheel lift system periodically for damage or evidence of pending failure. Damaged or broken parts should be replaced immediately. Never operate the carrier or any of its components if they are defective or operating improperly. The cause of any binding or leakage should be determined immediately and the problem promptly fixed.

Your carrier has Jerr-Dan's “No-Lube” maintenance-free pivot joint system. Most of the pivot joints utilize high-strength composite bearings with hardened and plated pins to reduce maintenance, down-time and the cost of lubrication over the life of the product. There are however a few areas that still require some lubrication or maintenance. Sliding surfaces should be cleaned periodically with a clean cloth. The Lubrication Chart and diagram shows the location of these points, lubrication schedules, and what type of lubricant to use.

Check the hydraulic oil level bimonthly or after any leakage. A sight glass has been provided on the hydraulic tank. The proper oil level is best checked with all cylinders fully retracted. Use a Super Premium Grade Multi-Viscosity hydraulic oil. (See Chart) (Automatic transmission fluid may be used in the hydraulic system if necessary.) To add oil, roll the deck rearward to gain access to the hydraulic tank fill cap.

The hydraulic filter located on the return side of the hydraulic tank comes equipped with a restriction indicator gauge. The gauge shows the condition of the filter element. When the needle reaches the red band (25 psi), the filter is starting to bypass and the element needs to be changed. Failure to change the filter element will result in premature wear and/or failure of any or all of the hydraulic components. **Only check gauge when hydraulic**

fluid is at operating temperature. Cold oil is more dense and will give a false indicator gauge reading.

Cold temperatures can cause hydraulic oils to thicken and adversely affect the hydraulic functions of your carrier. If this is the case, it will be necessary to change the hydraulic oil to maintain maximum system efficiency. A hydraulic oil such as Mobil DTE 11M or Conoco AW Hydraulic Fluid MV 32 can be used to replace the factory installed oil or it can be added to the hydraulic oil in your factory system.

If a cylinder seal leaks, disassemble the cylinder and find the cause of the leak. Small scores caused by chips or contaminated fluid can usually be worked out with fine emery cloth to avoid repetition of the trouble. Whenever any seal replacement is necessary, it is always advisable to replace all seals in that component. These seals are available in kits. Also, thoroughly clean all components before reassembly.

The carrier deck hold downs and cylinder saddles are mounted to the truck chassis by bolts. We recommend that these bolts be inspected within the first 30 days and inspected and retorqed every 90 days thereafter. Replace any broken or damaged bolts immediately. **Refer to chart on the following page.**

The deck and/or rails of your carrier may have been built from high strength aluminum which has been carefully assembled and polished in our factory. To keep it clean and free of dirt, use any non-abrasive soap or detergent recommended for automotive finishes. Use a soft cloth or sponge and finish with a thorough rinsing. Drying with a soft cloth or chamois will prevent spotting or streaking. A coat of automotive wax is recommended.

FASTENER TORQUE SPECIFICATIONS

TIGHTENING TORQUES (FOOT-POUNDS) FOR SCREWS AND NUTS			
SIZE INCHES (MM)	GRADE 2	GRADE 5	GRADE 8
1/4 (6.350)	6	8	10
5/16 (7.938)	10	14	19
3/8 (9.525)	17	27	33
7/16 (11.112)	28	45	60
1/2 (12.700)	45	68	90
9/16 (14.288)	63	100	120
5/8 (15.875)	90	135	180
3/4 (19.050)	145	230	310
7/8 (22.225)	145	380	500
1 (25.400)	220	570	760

- All torque values shown are for bolts (cap screws) and nuts that are either zinc-plated or lubricated.
- Torques shown above apply only to screws and nuts used for assembly and installation of all carrier components, not to the chassis.
- Different torque values may be given in instructions for certain components due to short thread engagement or low-strength internal threads.
- When nuts are used, tighten nuts to torques shown (screws or bolts should be held but not turned). **Always use a calibrated torque wrench.**
- Retighten nuts of all mounting screws that secure the carrier and carrier-body within 30 days after putting the vehicle into service. Thereafter, inspect and retorque such screws and nuts every 90 days and after each job that imposes extremely heavy loads on the equipment.
- Convert ft/lbs to Nm (Newton metres) by using the following formula:

Multiply:		by:		to get:
ft/lbs	x	1.3558	=	Nm (Newton metres)

OILS AND GREASES

The following oils and greases are suitable for use with your Jerr-Dan Carrier.

Company	Product
	HYDRAULIC OILS
1. Chevron	AW Hydraulic Oil MV
2. Exxon	Univis N32
3. Mobil	DTE13
4. Texaco	Rando DHZ-32
5. Shell	Tellus Oil T 32
6. Citgo	A/W All Temp
7. Amoco	Rycon Oil 32
8. Conoco	AW Hydraulic Fluid MV 46
9. Mobil	DTE11M (for cold weather use)
10. Conoco	AW Hydraulic Fluid MV 32 (for cold weather use)
	GREASES
1. Drydene	HD Lithium EP2
2. Gulf	Crown EP2
3. Amoco	Amolith EP2
4. Shell	Alvania EP2
5. Texaco	Marfax EP2
6. Mobil	Mobilux EP2
7. Sunoco	Prestige EP2
	WINCH AND GEAR LUBE
1. Phillips	140 wt. EP Gear Lube 93301 (or approved equivalent)
2. Mobil	Mobil SCH624 (or approved equivalent for cold weather use)

WIRE ROPE HANDLING AND INSPECTION

⚠ WARNING

Wire Rope WILL FAIL if worn-out, overloaded, damaged, improperly maintained or abused.

Wire rope failure may cause serious injury or death!

Protect yourself and other:

- ALWAYS INSPECT wire rope for WEAR, DAMAGE or ABUSE BEFORE USE.
- NEVER USE wire rope that is WORN-OUT, DAMAGED or ABUSED.
- NEVER OVERLOAD a wire rope.
- INFORM YOURSELF: Read and understand manufacturer's literature or "Wire Rope and Sling Safety Bulletin"

REFER TO APPLICABLE CODES, STANDARDS and REGULATIONS for INSPECTION REQUIREMENTS and REMOVAL CRITERIA.

A new wire rope requires a break-in period. Run the wire rope through several cycles at low speeds gradually increasing the load on the wire rope. Make sure that the wraps of the wire rope are tight and evenly wound on the winch drum. A loose wire rope on the winch drum will cause crushing of the wire rope when heavy loads are applied.

All wire rope in continuous service should be observed during normal operation and visually inspected on a weekly basis. A complete and thorough inspection of all ropes in use must be made at least once a month and all rope which has been idle for a period of a month or more should be given a thorough inspection before it is put back into service. All inspections should be the responsibility of and performed by an appointed competent person with the training and experience to look for deterioration of the wire rope.

It is good practice , where the equipment is consistently in use, to give the rope a certain length of service, several hundred hours, several weeks or months and then renew the rope regardless of it's condition. This method eliminates the risk of fatigue causing rope failure.

Any deterioration, resulting in a suspected loss of original rope strength, should be carefully examined and a determination made as to whether further use of the wire rope would constitute a safety hazard.

There are certain points along any given rope which should be given more attention than others, since some areas will be subjected to greater stresses, forces, and hazards. Some of these areas include at the winch drum, at the boom sheaves and at the end attachments.

All products are subject to age, wear and deterioration, all of which cause a reduction in the products breaking strength capacity.

Probably the most common sign of rope deterioration and approaching failure is broken wires. Inspection criteria are specific as to the number of broken wires allowable under various circumstances. It is important that a diligent search be made for broken wires, particularly in critical areas. Inspection of wire rope ends should include hooks and thimbles.

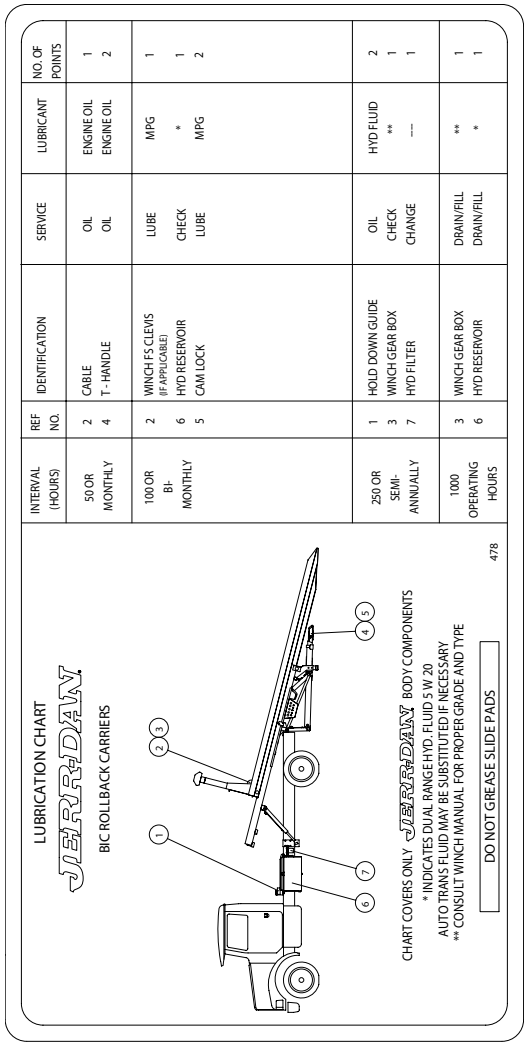
Replace any wire ropes that have been abraded, crushed, kinked or twisted.

Wire rope should be routinely cleaned monthly of any and all debris. Grit and gravel can quickly reduce a wire ropes life. A wire rope should be well lubricated so that it can act and perform as it was designed. Lubrication keeps a wire rope flexible and free from rust.

Consult the manufacturer or your local distributor for the proper replacement wire rope.

LUBRICATION POINTS

The following lubrication chart is located on the headboard on the driver's side of the carrier deck.



TROUBLE SHOOTING

You probably won't require anything but preventive maintenance to keep your Carrier running, however, the following chart will help you isolate and correct minor problems if they occur with use. Any service work on the hydraulic system should be performed by qualified mechanics. For a more comprehensive trouble shooting guide refer to Jerr-Dan's "Hydraulic Troubleshooting Guide", part number 5-377-000013, which is available through the Service Parts Department.

HYDRAULIC SYSTEM

Problem	Cause	Solution
Slow operation	a. Low engine RPM b. Low oil level c. Blocked or restricted hoses d. Dirty hydraulic oil e. Hydraulic pump worn f. Clutch Pump belt slipping	a. Speed up engine b. Check dipstick and fill with the specified oil c. Inspect: remove blockage d. Drain, flush and refill with clean oil, replace filter e. Rebuild or replace f. Tighten or Replace belt
Valve Solenoid(s) sticking or frozen	a. Broken centering spring or clogged with foreign material b. Low Amperage/Voltage at Solenoid	a. Inspect, clean or replace b. Check Amperage/Voltage
Valve leaks	a. Defective seals	a. Replace
Cylinder leaks	a. Defective seals or rods b. Dirty or Defective CounterBalance Valve	a. Inspect and replace b. Clean or Replace CounterBalance Valve
Erratic cylinder function	a. Air in the system b. Defective pump (pulsating)	a. Cycle hydraulic system 10 to 15 times to remove air b. Replace if necessary
Remote hand controller fails to respond	a. Electric power turned off b. Bad or discharged battery c. Faulty Remote Hand Controller d. Loss of program memory	a. Turn on controller power on controller b. Replace battery c. Use Manual Controls at Rear of Body d. Reprogram memory

HYDRAULIC CLUTCH PUMP

Problem	Cause	Solution
No oil flow from pump	a. No oil in reservoir b. Pump not “primed” c. Clutch not engaging	a. Fill hydraulic reservoir b. Fill inlet hose from pump end c. Check wiring/fuse
Pump will not build or hold pressure	a. Relief valve improperly set b. Relief valve stuck open	a. Adjust relief valve to manufacturers specification b. Remove, clean and reset
Pump is noisy - whines	a. Air in the system b. Cavitation	a. See “Oil Foaming” b. Check Hoses, Reservoir breather or strainer
Pump is noisy - squeals	a. Belts are worn/loose b. System horsepower demand exceeds belt capacity c. Clutch is slipping	a. Inspect, adjust and/or replace b. Review application c. Check voltage/ground
Pump ‘throws” belts	a. Engine and pump pulley alignment b. System horsepower demand exceeds belt capacity c. High-speed engagement	a. Check installation b. Review application c. Reduce start-up RPM
Pump leaks at shaft seal	a. Damaged seal b. Damaged pump body	a. Replace seal b. Replace pump body
Pump leaks at body section	a. Damaged seal b. Damaged pump body c. Body section bolt torque	a. Replace seal b. Replace pump body c. Torque to specification
Pump leaks at fittings	a. Loose fitting b. Damaged fitting c. Damaged pump body	a. Inspect and/or tighten b. Replace fitting c. Replace pump body
Pump is overheating	a. Low oil level b. Dirty oil c. Relief valve stuck open d. Relief valve improperly set e. Improper weight oil	a. Fill hydraulic reservoir b. Replace oil and filter c. Remove, clean and reset d. Adjust relief valve to manufacturers specification e. Replace with correct oil
Oil foaming	a. Low oil lever b. Improper oil	a. Fill hydraulic reservoir b. Fill with correct oil

PTO FUNCTIONING IMPROPERLY

Problem	Cause	Solution
Cable tight or frozen	a. Cable kinked or bent b. Cable and PTO connection not adjusted properly c. Mounting bracket nuts are over tightened at PTO	a. Straighten or replace b. Inspect and adjust c. Loosen if necessary
Rattling noise in PTO	a. PTO backlash too loose (Consult PTO Manual)	a. Shims must be removed
Howling Noise in PTO	a. PTO backlash too tight (Consult PTO Manual)	a. Shims must be added
Gear oil leak between PTO and pump	a. Defective shaft seal	a. Remove and replace
PTO will not engage or disengage	a. Cable and PTO connection not adjusted properly b. Defective shifter cover plate	a. Inspect and adjust b. Inspect and replace

HYDRAULIC PUMP

Problem	Cause	Solution
Pump noisy (Cavitation)	a. Low oil supply b. Heavy oil c. Dirty oil filter d. Restriction in suction line e. Pump worn	a. Fill to proper level b. Fill with proper oil (See chart) c. Replace filter d. Clean out and remove e. Repair or replace
Pump/Clutch Pump slow or fails to respond	a. Low oil supply b. Worn or Loose Belt(s)	a. Fill to proper level b. Tighten or Replace Belt(s)
Oil heating up	a. Foreign material lodged in relief valve b. Using too light oil c. Dirty oil d. Oil level too low e. Pump worn (slippage)	a. Inspect and remove/ replace filter b. Drain and refill with clean oil c. Drain, flush and refill with clean oil/replace filter d. Fill to proper level e. Repair or replace

HYDRAULIC PUMP - con't

Problem	Cause	Solution
Oil foaming	a. Air leaking into suction line b. Wrong kind of oil c. Oil level too low	a. Tighten all connections b. Drain and refill with non-foaming type of hydraulic oil (See lube chart) Replace filter c. Refill to proper level
Hydraulic oil leak between PTO and pump	a. Defective shaft seal	a. Replace shaft seal
Clutch Pump leaks at Pulley Shaft	a. Defective Shaft Seals b. Hydraulic Supply/Return lines connected incorrectly	a. Replace seals or Pump b. Check hydraulic line connections
Pump leaks at front and rear covers	a. Defective seals	a. Replace seals

WINCH FUNCTIONING IMPROPERLY

Problem	Cause	Solution
Winch screeches during operation	a. Insufficient lubrication	a. Lubricate per lube chart
Winch will not pull load or take in cable	a. Free spooling device not engaged b. Sheared keys or broken coupling c. Hydraulic pump worn d. Insufficient pump pressure e. Overload	a. Engage b. Inspect or replace c. Inspect and replace d. Check hydraulic pump and hydraulic fluid level e. Install snatch block in the rigging line

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GLOSSARY OF TERMS

A

Anchoring Device - Used to attach cable ends, snatch blocks, safety chains, and tie-down assemblies to the towing vehicle.

Approach Angle - Angle between the plane of the platform and the ground.

Attachment - Any device that can be added to a basic unit or assembly.

Auxiliary Braking Device - A device which attaches to the disabled vehicle to assist the tow truck's brakes in retarding or stopping both vehicles.

Auxiliary Equipment - Equipment that is not necessary to perform the basic function of the primary equipment.

Auxiliary Towing Lights - Stop, tail, and turn signal lights attached to the trailing end of the towed vehicle and operated as part of the towing vehicle lighting system.

B

Bending Moment - The force times the distance from a reference point to the point the force is applied causing bending.

Bird Nesting - The tangling and intertwining of wraps and layers on a drum.

Body - The structure mounted on a chassis cab or that portion of the vehicle that carries the load.

Body Hinge - The attachment mechanism connecting the body to the hinge pin at the pivot axis about which the body rotates into the tilt position.

Body Subframe - Another term for body understructure or mounting frame.

Body Weight - Unmounted weight of a body with applicable options.

Boom - The structure member that supports the load.

Boom Angle - The boom angle is measured between a horizontal line and a line through the boom pivot and center of sheave.

Boom Head - The structural member at one end of the boom which can swivel and support the load lifted through the sheave and sheave support device.

Boom Length - The straight line distance from center of the revolving base to the center of the boom head.

Brakes - Parking - A system used to hold a stopped machine in a stationary position.

Brakes - Service - A primary brake system used for retarding and stopping the truck.

Bumper - DOT - A bumper designed to provide rear-end protection that meets the requirements of FMCSR 393.86.

Bus Bar Grid - A device used for towing vehicles by lifting one end of the towed vehicle by the wheels.

C

CA (Cab to Axle) - The distance from the back of the truck cab to the center of the rear axle.

CG (Center of Gravity) - The point at which the weight of the chassis, body/ equipment and payload, if collectively or individually supported, would balance vertically, horizontally, and laterally.

CT (Cab to Tandem) - The distance from the back of the truck cab to a point midway between the tandem axles.

Cable - Steel wire rope used for pulling.

Car Carrier - Vehicles equipped to transport other vehicles mounted on a flat platform and/or with an additional assembly attached to the rear to facilitate towing a second vehicle. These units are also known as slidebacks, rollbacks, transporting equipment carriers and flatbeds. See Carrier.

Carrier - A platform body with a winch for loading.

Casualty Vehicle - The damaged or disabled vehicle.

Capacity - The load that a machine can lift at any given point.

CAUTION - A signal word used when a potentially hazardous situation exists that might result in minor injury or property damage.

Certification Label - Required by Public Law 89-563, which states that a motor vehicle or item of motor vehicle equipment complies with all applicable Federal Motor Vehicle Safety Standards (FMVSS) in effect on the date of manufacture.

Chain Assemblies - Chain with all hardware and coupling devices.

Chassis Cab - A vehicle consisting of a chassis upon which is mounted a cab; capable of being driven by the addition of wheel or other items of running gear, but lacking a body or load-carrying structure.

Completed Vehicle - A vehicle that requires no further manufacturing operations to perform its intended function, other than minor finishing operations such as painting.

Component - Any part of an assembly on a machine when referred to individually.

Control - A device used to control the functions of a unit.

Control Lever- A device for imparting motion into a control linkage.

Crossbar - A transverse horizontally pivoting member attached to the boom of a wheel-lift or underlift for attaching towing accessories.

Curb Side - The right or passenger side of the vehicle when viewed from the rear, opposite side from *ROADSIDE.*

Curb Weight - The weight of a vehicle in operational status, with all standard and commonly installed equipment and the fuel tank(s) filled to capacity.

Cylinder - A device which converts fluid power into a linear mechanical force and motion usually consisting of a movable piston and piston rod within a cylinder bore.

D

DANGER - A signal word used when an imminently hazardous situation exists that can result in death or serious injury.

Disabled Vehicle - Any vehicle that cannot operate under its own power.

Dolly - A four-wheeled carriage used in towing to support the trailing end of the towed vehicle.

DOT (Department of Transportation) - A federal agency dealing with regulations concerning both the manufacture and operation of motor vehicles and motor vehicle equipment. See NHTSA.

Driveline - The driveshaft and associated joints.

Drum - Any spool on which are wrapped ropes used in machine operation.

E

Extend Cylinder - Cylinders used to extend or retract boom structures.

F

Filter- A device whose primary function is the retention by a porous media of insoluble contaminants from a fluid.

Final Stage Manufacturer - A person, firm, or corporation who performs such manufacturing operations on an incomplete vehicle that it becomes a completed (end-user) vehicle.

FMVSS (Federal Motor Vehicle Safety Standards) - Regulations promulgated by NHTSA under Public Law 89-563, which are mandatory and must be complied with when motor vehicles or items of motor vehicle equipment are manufactured and certified thereto.

Frame - Structure on which either the upper or lower equipment is located.

Frame Cutoff - Centerline of rear axle(s) to the rearmost point of the chassis frame as modified for body installation.

Frame Lift - See Underlift.

Frame Section Modulus - The engineering term that indicates the relative strength of frames as it relates to shape. It takes into account frame depth, flange width, and material thickness. All other things being equal, the frame with the largest section modulus will have the greatest strength and stiffness, i.e., the ability to more effectively resist deflection under load.

Free Spool - The operation of unspooling wire rope from a drum by pulling on the end of the wire rope while the winch is stationary. The drum is disconnected (declutched) from its powertrain during this operation.

Forks - A device attached to the lift bar for lifting a vehicle by the tires, axle, frame, or structural member. May be classified as chain, axle, or frame forks.

FW (Frame Width) - The overall width of the chassis frame measured outside to outside behind the cab.

G

GAWR (Gross Axle Weight Rating) - The value specified by the manufacturer as the load-carrying capacity of a single-axle system as measured at the tire-roadway interface.

GCWR (Gross Combination Weight Rating) - Represents the entire weight of a vehicle on the ground with a trailer or trailers including vehicle, equipment, driver, fuel, and payload (everything that moves with the vehicle.) Gross combination weights published represent maximum allowed.

Grab Hook - For use with chains and some tow-sling hookups.

Grid - A device that attaches to the lift bar for engaging the tires of a towed vehicle.

GVWR (Gross Vehicle Weight Rating) - The maximum total vehicle rated capacity, measured at the tire ground interface, as rated by the chassis manufacturer.

GVW (Gross Vehicle Weight) - Value specified by the manufacturer as the maximum loaded weight of a single vehicle including all equipment, fuel, body, payload, driver, etc.

H

Headboard - Structure on which an emergency light bar is mounted.

Hook-up Chains - Length of chain used to connect a recovery vehicle to a casualty vehicle.

Horizontal Center of Gravity (HCG) - The point at which half of the gross weight is forward and half is aft.

Hydraulic Control Valve - A mechanical device to divert or control the flow of fluid in a hydraulic system.

Hydraulic Hose - Flexible oil lines used to transmit fluid.

Hydraulic Oil - Fluid used in operation of hydraulic systems.

Hydraulic Relief Valve - A mechanical device used to limit the pressure in a hydraulic circuit.

I

Incomplete Vehicle - As assemblage consisting, as a minimum, of a frame and chassis structure, powertrain, steering system, suspension system and braking system to the extent that those systems are to be part of the complete vehicle that requires further manufacturing operations.

Independent - The Wrecker Boom and Underlift Boom are separate (independent) from each other.

Integrated - The Wrecker Boom and Underlift Boom are combined together as a complete unit.

J

J-Hook - Attachment device used for towing/recovery.

L

L-Arm - See Wheel Arm

Layer - All wraps of the same diameter on a drum.

Lift Bar - A traverse horizontally pivoting member attached to the boom of a wheel-lift or underlift for attaching towing accessories.

Lift Cylinder - Cylinders used to raise or lower boom structures.

Lift Forks - See Forks.

Lifting Capacity - The load that a machine can lift at any given point.

Lift Tow Rating - Maximum Steering Towing Load.

Light Bar (Emergency) - An array of lamps used in accordance with local ordinances.

Light Pylon - Structure on which an emergency light bar is mounted.

Line Pull - The maximum wire rope pull, in pounds, at the drum, at full-load engine speed, with specified lagging diameter.

Line Speed - Speed in feet per minute of a single rope, based on full load engine speed with specified lagging diameter.

M

Marker Lights - Small amber and red lights attached to bodies to indicate overall clearance at night.

Maximum Loaded Vehicle Weight - The sum of curb weight, passengers and cargo.

Motor - A rotary motion device which changes hydraulic energy into mechanical energy.

Motor Vehicle Safety Standards - See FMVSS.

Mud Flap - Splash-Deflecting shields at rear of wheel.

N

NHTSA (National Highway Traffic Safety Administration) - The federal agency responsible for promulgating and insuring compliance of regulations dealing with the manufacture and certification of motor vehicles or items of motor vehicle equipment. See DOT.

O

Outriggers - A beam type device attached to frame of a truck or rubber tired carrier, to provide maximum stability by reducing load on tires and increasing width of operating base.

Overall Vehicle Height - Distance from the ground to the highest point on the vehicle with equipment in stowed position.

Overall Vehicle Width - The design dimension ot the widest part of the vehicle, exclusive of signal lamps, outside rearview mirrors, flexible fender extensions, and mud flaps, determined with doors and windows closed and the wheel in the straight ahead position.

Overhang - The horizontal distance for the centerline of a single rear axle or center point of a tandem rear axle to a point where the vertical component is imposed.

P

Payload - The weight of the commodity being hauled. Payload capacity is computed by subtracting the completed weight of the vehicle (including driver and passengers) from the GVWR.

Pintle Hook - Hook mounted on a truck or semitrailer used to couple a full trailer.

PTO (Power Takeoff) - Mechanical device used to transmit engine power to auxiliary equipment. Power takeoffs can be mounted on either a main or auxiliary transmission. Front mounted and flywheel mounted power takeoffs are also used in various applications.

Push Bumper - Device used to push a vehicle, sometimes equipped with a rubber face.

R

Rating - The specified design operating limit of a device.

Rear Jack - One or more devices designed, when used, to stabilize chassis.

Recovery - Act of moving a vehicle to a position from which it can be driven or towed.

Recovery Vehicle - Vehicle to retrieve and if necessary lift and tow other vehicles.

Resisting Bending Moment (RBM) - A calculation used to compare frames of different section modulus and of different material. It is the product of the section modulus times the yield strength of the frame material.

Roadside - The left or driver's side of the vehicle when viewed from the rear, opposite side from *Curbside*.

Rolling Resistance - The restraining forces contributed to the load when rolling on wheels.

Rollback - See Car Carrier

Rope - See Wire Rope

Rub Rail - Member running longitudinally providing rub service on side of body.

S

SAE - Society of Automotive Engineers.

Safety Chain(s) - Used to connect the towing and towed vehicle as a secondary coupling system to prevent separation of a vehicle trailer, converter dolly, or towed vehicle, should the primary coupling become detached.

Safety Wrap - Wrapping the tow chain(s) around the grab hooks of the tow bar inboard of chain.

Scotch Blocks - A device used to prevent chassis movement.

Serial Number - An identification number stamped on a metal plate by the passenger car, van, or truck manufacturer (see VIN), or the towing equipment manufacturer, and placed on chassis, body, or components for identification purposes.

Sheave - A wheel grooved for a wire rope to transfer power.

Shipping Weight - The dry weight of a complete truck with all standard equipment including grease and oil but without and fuel or coolant.

Side Rail - Horizontal extensions of the body sides, either sheet or tubular metal.

Slew - A rotating super structure about a vertical axis.

Snatch Block - A single or multiple pulley used to reduce line tension or change cable direction.

Spacer Blocks - Used in conjunction with wood beams to provide additional clearance between the tow bar, chains, and the body of the casualty vehicle.

Spade - One or more ground penetrating devices designed primarily, when used, to stabilize rearward chassis movement.

Stabilizers - A hydraulic or manually operated leg device (i.e., outboard legs, outriggers, or jack legs) attached to trucks to give additional support down to the ground for improved stability.

Steering Wheel Securing Device - Used to secure front wheels in lieu of standard steering column lock.

Stroke - The length of travel of a cylinder rod or piston.

Suction Line - A tubular connection line to convey fluid between a reservoir or tank and the inlet of a hydraulic pump.

Supply Tank - An oil reservoir used in the hydraulic system.

Swivel Head - See Boom Head.

T

T-Hook - Attachment device used for towing.

Tail Plate - Rearmost part of the towing vehicle body.

Tail Swing - Clearance distance from center of rotation to the extreme rear extension of the revolving superstructure.

Tie-Down Assemblies - Device(s) used to restrain cargo or vehicles (i.e., strap, bridle, chain, or cable.)

Tie-Down Chains - Chains used to restrain cargo or vehicles.

Tilt Cylinder - Cylinders used to change the attitude of a structure or body.

Tire Clearance - Necessary space between tires and the nearest component to allow operation of truck without damage to tires.

Tire Lift - A device used for towing vehicles by lifting one end of the towed vehicle by the wheels.

Tow - Act of transporting a vehicle form one point to another by a second vehicle.

Towed Vehicle - The vehicle being towed.

Towing - See Tow.

Tow Bar - A device for positioning a towed vehicle behind a towing vehicle.

Tow Chain - Length of chain used to connect the sling with the towed vehicle.

Tow Sling - A device used for lifting and towing vehicles with a partial load supported on rubber straps.

Tow Vehicle - Vehicle used to lift-tow other vehicles.

Towing Light/Bar - See Auxiliary Towing Lights.

Trailer 5th Wheel Plate - A plate attached to a tow truck-lifting device that captivates the kingpin on trailers allowing a trailer to be towed in the same manner as intended by the trailer manufacturer.

U

Underlift - A device used for towing vehicles by lifting one end of the towed vehicle from under the axle or structural member.

Unloaded Vehicle Weight - The weight of a vehicle with maximum capacity of all fluids necessary for operation of the vehicle, but without cargo or occupants. Also referred to as curb weight.

V

Valve - A device which controls fluid flow direction, pressure, or flow rate.

VIN (Vehicle Identification Number) - The number assigned to a vehicle by the manufacturer primarily for registration purposes. It may consist of numerals, letters, or a combination thereof.

W

WARNING - A signal word used when a potentially hazardous situation exists and could result in death or serious injury.

Weight Distribution - The portion of total weight of the vehicle on each axle.

Wheel Arm - A device that attaches to the lift bar for engaging the tires of a towed vehicle.

Wheelbase - Horizontal dimension from centerline of front axle to the effective centerline of the rear axle(s).

Wheel Chock - A device used to prevent chassis movement.

Wheel Fork - See Wheel Arm.

Wheel-Lift - A device used for towing vehicles by lifting one end of the towed vehicle by the wheels.

Wheel Securing Device - A strap or mechanical device, when attached to the lift-bar, which limits the potential for separation of the towed vehicle from the underlift, during operating conditions.

Wheel Straps - Used to tie down wheels of the towed vehicle when using wheel-lift, car carrier, or dolly towing equipment to limit the potential for separation of the towed vehicle from the towing apparatus.

Winch - A device for winding and unwinding cable.

Wire Rope - See Cable

Working Load Limit - Minimum breaking strength divided by the factor of safety.

Wrap - A single coil of wire rope wound on a drum.

Wrecker - See Tow Vehicle, or Recovery Vehicle.